

Drinking water calculation

Trinkwasser Hydraulikreport

Dendrit 

Project cover sheet

Project and real property

Project number	1
Project name	Demoprojekt
Creation date	
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Country	Deutschland

Designer

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Versions

Date	
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Basis of the report

The hydraulic report was created from the following drawing: 'Trinkwasser Hydraulikreport'

Standards used

The pipe diameters and the dimensioning of the installed fittings and equipment were determined on the basis of the following regulations:

DIN 1988-200:2012-05

Technical rules for drinking water installations - Part 200:

Type A installation (closed system) - planning, components, equipment, materials

DIN 1988-300:2012-05

Technical rules for drinking water installations - Part 300:

Determination of pipe diameters

Calculation flow rate:

Reference values of DIN 1988-300

DIN 1988-500:2011-02

Technical rules for drinking water installations - Part 500:

Pressure boosting systems with speed-controlled pumps

The following design parameters were used within the permissible limits of the aforementioned regulations:

Maximum permissible flow velocities

Section type	Maximum permissible flow velocity v_max in m/s						
	PWC	PWH	PWC-C	PWH-C	PWC-AB	NPW	HYDR
House connection pipe	2.00						
Distribution pipework	2.50	2.50	1.00	1.00		2.50	5.00
Riser/downpipe	2.50	2.50	1.00	1.00		2.50	5.00
Floor distribution pipework	2.50	2.50	1.00	1.00		2.50	5.00
Floor pipework	2.50	2.50	1.00	1.00		2.50	5.00
Single supply line	2.50	2.50				2.50	5.00
Floor ring main	2.00	2.00				2.00	5.00
Inliner cladding pipe	2.50	2.50					
Inliner inner pipe			1.50	1.50			
Flushing pipe					2.50		

Presetting pipes / insulation

Section type	Pipe sequence	ϑ_L °C	Insulation	λ_D W/(m·K)	s_D mm	s_D %
PWC						
House connection pipe	Neutral - PEH	15.0	Uninsulated			
Distribution pipework	Geberit - Mapress 1.4401	22.0	100% - Rock wool - aluminium-laminated			100
Riser/downpipe	Geberit - Mapress 1.4401	25.0	100% - Rock wool - aluminium-laminated			100
Floor distribution pipework	Geberit - Mapress 1.4401	27.0	100% - Rock wool - aluminium-laminated			100
Floor pipework	TECE - TECEflex SBR	24.0	100% - Pipe insulation			100
Single supply line	TECE - TECEflex SBR	24.0	100% - Pipe insulation			100
Floor ring main	TECE - TECEflex SBR	24.0	100% - Pipe insulation			100
Inliner cladding pipe	Geberit - Mapress	25.0	100% - Pipe insulation			100
PWH						
Distribution pipework	Geberit - Mapress 1.4401	22.0	100% - Rock wool - aluminium-laminated			100
Riser/downpipe	Geberit - Mapress 1.4401	25.0	100% - Rock wool - aluminium-laminated			100
Floor distribution pipework	Geberit - Mapress 1.4401	27.0	100% - Rock wool - aluminium-laminated			100
Floor pipework	TECE - TECEflex SBR	27.0	100% - Pipe insulation			100
Single supply line	TECE - TECEflex SBR	27.0	100% - Pipe insulation			100
Floor ring main	TECE - TECEflex SBR	27.0	100% - Pipe insulation			100
Inliner cladding pipe	Geberit - Mapress	25.0	100% - Pipe insulation			100
PWH-C						
Distribution pipework	Geberit - Mapress 1.4401	22.0	100% - Rock wool - aluminium-laminated			100
Riser/downpipe	Geberit - Mapress 1.4401	25.0	100% - Rock wool - aluminium-laminated			100
Floor distribution pipework	Geberit - Mapress 1.4401	27.0	100% - Rock wool - aluminium-laminated			100
Floor pipework	TECE - TECEflex SBR	27.0	100% - Pipe insulation			100
Inliner inner pipe	Geberit - inner pipe	25.0	Uninsulated			

Pipe series used

DN	d _a	d _i	s _R	k	Delivery length	Curved
	mm	mm	mm	mm	m	
Geberit - Mapress 1.4401						
12	15.0	13.0	1.0	0.0015	6	✗
15	18.0	16.0	1.0	0.0015	6	✗
20	22.0	19.6	1.2	0.0015	6	✗
25	28.0	25.6	1.2	0.0015	6	✗
32	35.0	32.0	1.5	0.0015	6	✗
40	42.0	39.0	1.5	0.0015	6	✗
TECE - TECEflex PPSU						
12	17.0	11.5	2.8	0.0070	5	✓
15	21.0	14.1	3.5	0.0070	5	✓
20	26.0	18.0	4.0	0.0070	5	✗

Circulation systems

PWH-C

Maximum permissible difference between hot water and circulation temperature at a domestic hot water heater	$\Delta\vartheta_{TE} = 5.0 \text{ K}$
Maximum permissible flow velocity for circulation pipes < DN20	$v_{\max} = 0.3 \text{ m/s}$
Average pressure gradient for circulation pipes including individual resistance losses	$R_m = 2.0 \text{ hPa/m}$
Minimum pressure loss in thermostatic circulation control valves	$\Delta p_{ZRV, \min} = 100.0 \text{ hPa}$

Apparatus

Apparatus type	Maximum permissible pressure loss in hPa
House meter	650
Flat meter	500
Filter	200
Pipe separator	2000
Water softener	500
Others	500

Apparatus type	Maximum permissible velocity in m/s
Pipe separator	2.50

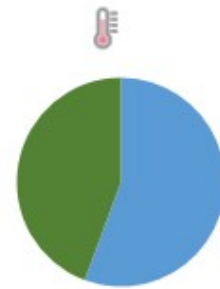
Specifications for checking the maximum permissible PWC ejection times at tapping valves

Maximum stagnation time	05:00:00
Maximum output time	00:00:30 hh:mm:ss
Maximum PWC temperature	25°C
Output times taking into account	Volume flow at quiescent pressure

Drinking water hygiene PWC + PWH

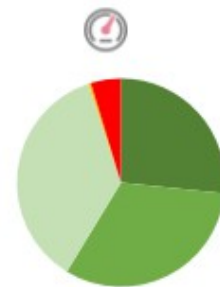
Temperature maintenance

Designation	Volume l
No temperature maintenance necessary	182.93
circulating	145.67
Storage tank	0.00
Flushing technology with temperature maintenance	0.00
No temperature maintenance possible	0.00
Total	328.60



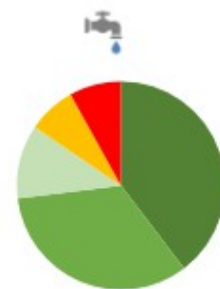
Flow rate

Designation	Volume l
circulating turbulent	90.28
turbulent min. single withdrawal	108.52
turbulent max. single withdrawal	122.69
Turbulent water exchange system	1.34
turbulent with VS	0.00
laminar	15.82
Total	338.66



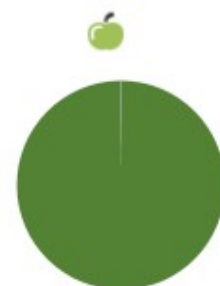
Water exchange

Designation	Volume l
> 20 consumers	117.32
10-20 consumers	98.83
5-10 consumers	33.93
2-4 Consumers	22.15
1 Consumer	23.78
Total	296.00



Nutrient supply

Designation	Volume l
Only certified components	327.99
Storage tank	0.00
no specification	0.61
Total	328.60



Further information

Drinking water hygiene PWC

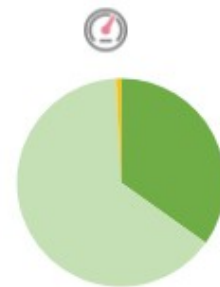
Temperature maintenance

Designation	Volume l
No temperature maintenance necessary	182.93
circulating	0.00
Storage tank	0.00
Flushing technology with temperature maintenance	0.00
No temperature maintenance possible	0.00
Total	182.93



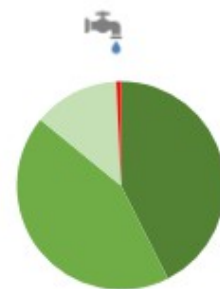
Flow rate

Designation	Volume l
circulating turbulent	0.00
turbulent min. single withdrawal	66.31
turbulent max. single withdrawal	122.69
Turbulent water exchange system	1.34
turbulent with VS	0.00
laminar	0.00
Total	190.35



Water exchange

Designation	Volume l
> 20 consumers	81.04
10-20 consumers	82.48
5-10 consumers	25.48
2-4 Consumers	0.00
1 Consumer	1.34
Total	190.35



Nutrient supply

Designation	Volume l
Only certified components	182.32
Storage tank	0.00
no specification	0.61
Total	182.93



Further information

Drinking water hygiene PWH

Temperature maintenance

Designation	Volume l
No temperature maintenance necessary	0.00
circulating	145.67
Storage tank	0.00
Flushing technology with temperature maintenance	0.00
No temperature maintenance possible	0.00
Total	145.67



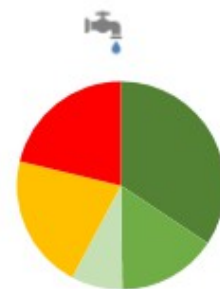
Flow rate

Designation	Volume l
circulating turbulent	90.28
turbulent min. single withdrawal	42.21
turbulent max. single withdrawal	0.00
Turbulent water exchange system	0.00
turbulent with VS	0.00
laminar	15.82
Total	148.31



Water exchange

Designation	Volume l
> 20 consumers	36.27
10-20 consumers	16.35
5-10 consumers	8.45
2-4 Consumers	22.15
1 Consumer	22.44
Total	105.65



Nutrient supply

Designation	Volume l
Only certified components	145.67
Storage tank	0.00
no specification	0.00
Total	145.67



Further information

Message list

Circulation

- ✓ Die 3,00 l Regel wird für alle PWH-Fließwege eingehalten. [DIN 1988-200 | Abs. 9.1]

Drawing

- 📌 Im Rohrnetz wurden 26 von 27 Verteilleitungen noch nicht editiert.
- ✓ Alle Bauteile wurden entsprechend ihrer Fließrichtung eingezeichnet.

Drinking water hygiene

- ✓ Alle Anbindeleitungen zu sporadisch durchflossenen Bauteilen sind nicht stagnationsgefährdet. [DIN 1988-200 | Abs. 10.2.5]
- ✓ Die 3,00 l Regel wird für alle PWC-Einzelanschlussleitungen eingehalten. [DIN 1988-200 | Abs. 8.1]
- ✓ Die maximale Ausstoßzeit von 30s nach 05:00:00h Stagnation wird für alle relevanten PWC- und PWH-Fließwege eingehalten. [DIN EN 806-2 | Abs. 3.6]

Hydraulics

- ✓ Der geforderte Verbrühungsschutz an den Entnahmestellen wird eingehalten. [DIN EN 806-2 | Abs. 9.3]
- ✓ Der maximale zulässige Ruhedruck wird an allen Entnahmearmaturen eingehalten. [DIN EN 806-2 | Abs. 16.1]
- ✓ Der geforderte Mindestfließdruck wird an allen Entnahmearmaturen eingehalten. [DIN 1988-300 | Abs. 5.2.1]

Product data

- ⚠ Die KTS Frischwasserstation L, Einzel, VA wurde über die Schnellauslegung bei einer Vorlauftemperatur von 75,0 °C ausgelegt. [KEMPER]

Ring circuit

- ✓ Eine turbulente Durchströmung aller Ringe wird durch automatische Spüleinrichtungen bzw. spülrelevante Verbraucher sichergestellt. [KEMPER]

Simulation circulation

- ✓ The temperature spread of (60.0 °C-55.0 °C) is maintained in the circulation system 'TWE 1'. Minimum temperature in the system: 57.1 °C.

Simulation of water withdrawal

- ✓ Spültechnik: Es wurden 98,7 % des nicht zirkulierenden Wasserinhaltes in 62:29 Minuten mit 624,88 l automatisiert gewechselt.

Overview of pressure levels

Pressure stage	TS no.	Designation	$\dot{V}_S + \dot{V}_D$ l/s	v m/s	$p_{\min(V)}$ hPa
1	1	Hausanschlusspunkt	1.80	1.18	4000

Pressure stage statistics

Statistics pressure level 1

Designation	Drinking water				Total	Unit
	cold PWC	warm PWH	Circulation PWC-C PWH-C		Flush PWC-AB	
Flow paths	188	90			278	Pcs
Circulation circuits				30	30	Pcs
Sections	418	223		67	708	Pcs
Pipe length	828.0	514.8		275.4	1,618.2	m
Minimum nominal diameter	DN 12	DN 12		DN 12		
Maximum nominal diameter	DN 40	DN 40		DN 25		
Water content	190.3	105.7		42.7	338.7	l
Inner surface	42.0	24.0		11.8	77.7	m ²
Water content of individual supply lines	1.3	0.0			1.3	l
Non-circulating pipe volume	190.3	0.0			190.3	l
Minimum flow velocity	0.18	0.67		0.05		m/s
Maximum flow velocity	2.43	2.49		0.59		m/s
Mouldings and connectors	653	403		269	1,295	Pcs
Shut-off and regulating valves	76	37		38	151	Pcs
Minimum insulation thickness	0	111		116		%
Max. ejection time	00:00	00:00				
Max. comfort class according to VDI 6003		III				
Min. comfort class according to VDI 6003		III				

Flow path overview

	Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
Storey:							
Room: Room not assigned							
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 91							
	1	2607	1011	9.6	0	✓	III
	16	2607	1137	9.6	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 61							
	2	2568	1011	20.4	0	✓	III
	12	2568	1022	20.4	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 92							
	3	2607	1059	9.6	0	✓	III
	27	2607	1142	9.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 93							
	4	2607	1102	9.6	0	✓	III
	17	2607	1124	9.6	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 62							
	5	2568	1038	20.4	0	✓	III
	20	2568	1027	20.4	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 94							
	6	2607	1075	9.6	0	✓	III
	44	2607	1169	9.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 95							
	7	2607	1150	9.6	0	✓	III
	28	2607	1129	9.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 96							
	8	2882	1148	10.1	0	✓	III
	38	2882	1480	10.1	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 63							
	9	2568	1055	20.4	0	✓	III
	35	2568	1046	20.4	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 64							
	10	2843	1130	21.5	0	✓	III
	32	2843	1353	21.5	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 97							
	11	2607	1049	9.6	0	✓	III

	Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
	73	2607	1199	9.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 98							
	13	2607	1166	9.6	0	✓	III
	49	2607	1146	9.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 99							
	14	2882	1196	10.1	0	✓	III
	57	2882	1484	10.1	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 100							
	15	2882	1303	10.1	0	✓	III
	39	2882	1452	10.1	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 65							
	18	2568	1031	20.4	0	✓	III
	60	2568	1076	20.4	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 66							
	19	2843	1178	21.5	0	✓	III
	51	2843	1358	21.5	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 103							
	21	3157	1449	10.6	0	✓	III
	71	3157	1863	10.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 102							
	22	2882	1205	10.1	0	✓	III
	85	2882	1514	10.1	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 101							
	23	2607	1032	9.6	0	✓	III
	116	2607	1221	9.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 104							
	24	2882	1351	10.1	0	✓	III
	59	2882	1457	10.1	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 105							
	25	2607	1209	9.6	0	✓	III
	78	2607	1176	9.6	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 67							
	29	3117	1431	22.5	0	✓	III
	61	3117	1725	22.5	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 12							
	30	2568	1020	9.4			

	Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
	42	2568	1020	9.4			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 68							
	31	2843	1187	21.5	0	✓	III
	79	2843	1388	21.5	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 106							
	33	3157	1497	10.6	0	✓	III
	96	3157	1868	10.6	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 69							
	34	2568	1014	20.4	0	✓	III
	100	2568	1098	20.4	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 107							
	36	3157	1604	10.6	0	✓	III
	74	3157	1840	10.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 108							
	37	2882	1248	10.1	0	✓	III
	125	2882	1594	10.1	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 109							
	41	2882	1361	10.1	0	✓	III
	89	2882	1487	10.1	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 10							
	43	2568	1024	9.4			
	58	2568	1024	9.4			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 70							
	45	3117	1479	22.5	0	✓	III
	86	3117	1729	22.5	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 110							
	46	2607	1094	9.6	0	✓	III
	181	2607	1263	9.6	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 11							
	47	2568	1027	9.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 111							
	48	3431	1761	11.0	0	✓	III
	108	3431	2277	11.0	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 112							
	50	2607	1192	9.6	0	✓	III
	119	2607	1198	9.6	0	✓	

Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 113						
 52	3157	1558	10.6	0	✓	III
 134	3157	1898	10.6	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 71						
 53	2843	1230	21.5	0	✓	III
 113	2843	1467	21.5	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 24						
 54	2843	1354	9.9			
 72	2843	1354	9.9			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 114						
 55	3157	1652	10.6	0	✓	III
 102	3157	1845	10.6	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 72						
 56	3392	1742	23.4	0	✓	III
 97	3392	2160	23.4	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 8						
 62	2568	1046	9.4			
 84	2568	1046	9.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 115						
 64	2882	1231	10.1	0	✓	III
 182	2882	1669	10.1	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 116						
 65	3431	1809	11.0	0	✓	III
 141	3431	2281	11.0	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 9						
 66	2568	1031	9.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 118						
 67	3431	1916	11.0	0	✓	III
 111	3431	2256	11.0	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 117						
 68	2882	1403	10.1	0	✓	III
 130	2882	1566	10.1	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 74						
 69	3117	1540	22.5	0	✓	III
 122	3117	1759	22.5	0	✓	

Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
Concealed wall fitting including thermostat (22 l/min) for shower ENT 73						
 70	2568	1076	20.4	0	✓	III
 154	2568	1140	20.4	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 22						
 75	2843	1358	9.9			
 95	2843	1358	9.9			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 119						
 76	3706	2050	11.4	0	✓	III
 146	3706	2626	11.4	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 23						
 77	2843	1366	9.9			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 120						
 80	3157	1601	10.6	0	✓	III
 183	3157	1978	10.6	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 75						
 81	3392	1790	23.4	0	✓	III
 128	3392	2165	23.4	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 121						
 82	3157	1713	10.6	0	✓	III
 140	3157	1875	10.6	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 36						
 83	3117	1734	10.4			
 106	3117	1734	10.4			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 76						
 87	2843	1213	21.5	0	✓	III
 155	2843	1500	21.5	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 6						
 88	2568	1076	9.4			
 118	2568	1076	9.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 122						
 90	3431	1874	11.0	0	✓	III
 184	3431	2333	11.0	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 77						
 91	3667	2032	24.4	0	✓	III
 136	3667	2493	24.4	0	✓	

Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 7						
	92	2568	1056	9.4		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 123						
	93	2607	1254	9.6	0	✓ III
	190	2607	1240	9.6	0	✓
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 124						
	94	3431	1964	11.0	0	✓ III
	145	3431	2261	11.0	0	✓
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 20						
	99	2843	1388	9.9		
	126	2843	1388	9.9		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 125						
	101	3706	2098	11.4	0	✓ III
	185	3706	2630	11.4	0	✓
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 21						
	103	2843	1370	9.9		
Concealed wall fitting including thermostat (22 l/min) for shower ENT 78						
	104	3117	1582	22.5	0	✓ III
	157	3117	1839	22.5	0	✓
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 126						
	105	2882	1293	10.1	0	✓ III
	225	2882	1710	10.1	0	✓
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 127						
	107	3706	2205	11.4	0	✓ III
	150	3706	2610	11.4	0	✓
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 34						
	109	3117	1738	10.4		
	133	3117	1738	10.4		
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 35						
	110	3117	1765	10.4		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 128						
	112	2882	1387	10.1	0	✓ III
	189	2882	1607	10.1	0	✓
Concealed wall fitting including thermostat (22 l/min) for shower ENT 79						
	114	3392	1855	23.4	0	✓ III
	160	3392	2186	23.4	0	✓

Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 48						
	115	3392	2164	10.9		
	139	3392	2164	10.9		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 129						
	117	3157	1576	10.6	0	✓ III
	221	3157	2076	10.6	0	✓
Concealed wall fitting including thermostat (22 l/min) for shower ENT 80						
	120	3667	2080	24.4	0	✓ III
	164	3667	2497	24.4	0	✓
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 130						
	121	3157	1756	10.6	0	✓ III
	188	3157	1955	10.6	0	✓
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 4						
	123	2568	1098	9.4		
	156	2568	1098	9.4		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 131						
	124	3431	1916	11.0	0	✓ III
	216	3431	2413	11.0	0	✓
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 5						
	127	2568	1086	9.4		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 132						
	129	3431	2029	11.0	0	✓ III
	187	3431	2299	11.0	0	✓
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 18						
	131	2843	1468	9.9		
	158	2843	1468	9.9		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 133						
	132	3706	2198	11.4	0	✓ III
	211	3706	2692	11.4	0	✓
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 19						
	135	2843	1400	9.9		
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 134						
	137	3706	2253	11.4	0	✓ III
	186	3706	2614	11.4	0	✓
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 32						
	138	3117	1768	10.4		

	Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
	161	3117	1768	10.4			
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 33							
	142	3117	1769	10.4			
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 46							
	143	3392	2169	10.9			
	163	3392	2169	10.9			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 81							
	144	2843	1275	21.5	0	✓	III
	217	2843	1542	21.5	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 47							
	147	3392	2183	10.9			
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 60							
	148	3667	2500	11.3			
	167	3667	2500	11.3			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 82							
	151	3117	1557	22.5	0	✓	III
	209	3117	1938	22.5	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 83							
	152	3392	1898	23.4	0	✓	III
	203	3392	2266	23.4	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 84							
	153	3667	2180	24.4	0	✓	III
	197	3667	2560	24.4	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 135							
	159	3157	1637	10.6	0	✓	III
	253	3157	2118	10.6	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 136							
	162	3431	1968	11.0	0	✓	III
	245	3431	2511	11.0	0	✓	
TECEprofil toilet module with Uni cistern, installation height 1120 mm ENT 2							
	165	2568	1139	9.4			
	207	2568	1139	9.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 137							
	166	3706	2241	11.4	0	✓	III
	238	3706	2772	11.4	0	✓	

	Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 16							
	168	2843	1514	9.9			
	202	2843	1514	9.9			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 138							
	169	2882	1448	10.1	0	✓	III
	229	2882	1649	10.1	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 30							
	170	3117	1848	10.4			
	196	3117	1848	10.4			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 44							
	171	3392	2196	10.9			
	193	3392	2196	10.9			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 139							
	172	3157	1731	10.6	0	✓	III
	223	3157	2053	10.6	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 58							
	173	3667	2505	11.3			
	192	3667	2505	11.3			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 3							
	174	2568	1108	9.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 140							
	175	3431	2071	11.0	0	✓	III
	219	3431	2379	11.0	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 17							
	176	2843	1480	9.9			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 141							
	177	3706	2353	11.4	0	✓	III
	215	3706	2677	11.4	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 31							
	178	3117	1799	10.4			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 45							
	179	3392	2188	10.9			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 59							
	180	3667	2528	11.3			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 85							
	191	3667	2222	24.4	0	✓	III

	Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
	231	3667	2639	24.4	0	✓	
Concealed wall fitting including thermostat (22 l/min) for shower ENT 86							
	194	3392	1949	23.4	0	✓	III
	237	3392	2365	23.4	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 56							
	195	3667	2567	11.3			
	222	3667	2567	11.3			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 42							
	198	3392	2276	10.9			
	227	3392	2276	10.9			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 57							
	199	3667	2533	11.3			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 87							
	200	3117	1619	22.5	0	✓	III
	247	3117	1979	22.5	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 43							
	204	3392	2232	10.9			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 28							
	205	3117	1946	10.4			
	233	3117	1946	10.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 142							
	206	3706	2292	11.4	0	✓	III
	260	3706	2871	11.4	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 29							
	208	3117	1879	10.4			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 14							
	210	2843	1555	9.9			
	239	2843	1555	9.9			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 143							
	212	3431	2029	11.0	0	✓	III
	268	3431	2553	11.0	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 144							
	213	3706	2396	11.4	0	✓	III
	242	3706	2757	11.4	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 15							
	214	2843	1563	9.9			

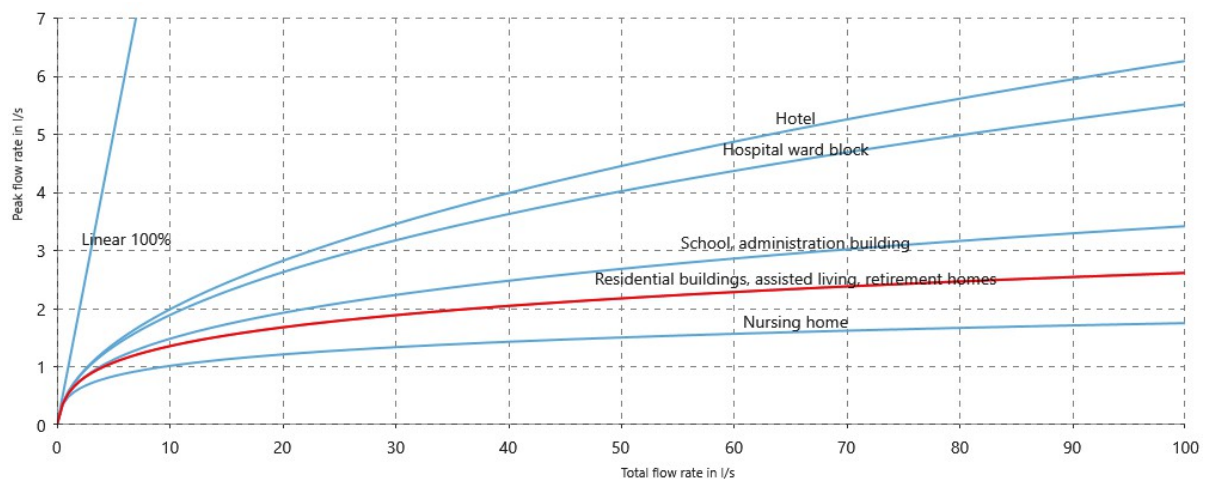
Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 145						
 218	3431	2123	11.0	0	✓	III
 249	3431	2478	11.0	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 1						
 220	2568	1150	9.4			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 146						
 224	3157	1792	10.6	0	✓	III
 256	3157	2095	10.6	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 54						
 226	3667	2647	11.3			
 244	3667	2647	11.3			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 55						
 228	3667	2595	11.3			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 40						
 230	3392	2375	10.9			
 251	3392	2375	10.9			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 88						
 232	3667	2274	24.4	0	✓	III
 257	3667	2738	24.4	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 41						
 234	3392	2312	10.9			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 26						
 235	3117	1988	10.4			
 258	3117	1988	10.4			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 27						
 236	3117	1977	10.4			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 89						
 240	3392	2011	23.4	0	✓	III
 264	3392	2406	23.4	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 147						
 241	3706	2354	11.4	0	✓	III
 274	3706	2912	11.4	0	✓	
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 148						
 243	3706	2447	11.4	0	✓	III
 263	3706	2855	11.4	0	✓	

Floor No.	p _{Ruhe} hPa	p _{Fl} hPa	V _E l/min	Ejection time s	30-s rule	Comfort class VDI 6003
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 13						
 246	2843	1605	9.9			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 52						
 248	3667	2746	11.3			
 262	3667	2746	11.3			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 53						
 250	3667	2675	11.3			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 149						
 252	3431	2184	11.0	0	✓	III
 270	3431	2519	11.0	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 38						
 254	3392	2416	10.9			
 269	3392	2416	10.9			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 39						
 255	3392	2411	10.9			
Concealed wall fitting including thermostat (22 l/min) for shower ENT 90						
 259	3667	2335	24.4	0	✓	III
 272	3667	2779	24.4	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 25						
 261	3117	2019	10.4			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 50						
 265	3667	2787	11.3			
 273	3667	2787	11.3			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 51						
 266	3667	2773	11.3			
Single-hole fitting including thermostat (10 l/min) for washbasin ENT 150						
 267	3706	2509	11.4	0	✓	III
 275	3706	2897	11.4	0	✓	
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 37						
 271	3392	2452	10.9			
TECEprofil toilet module withUni cistern, installation height 1120 mm ENT 49						
 276	3667	2815	11.3			
FK-4 RPZ backflow preventer outlet type BA, DN 15 FK4 1						
 277	4020	3402	34.2			

Peak flow rates of the pressure stages

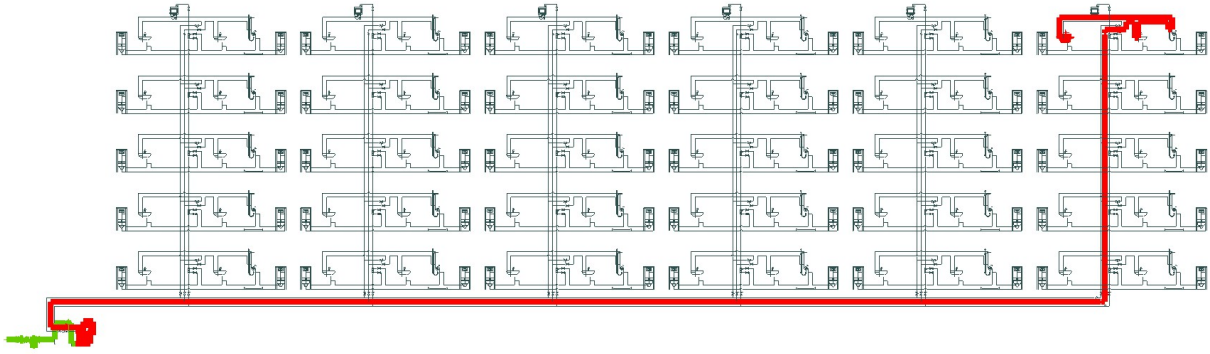
Calculation peak flow rate pressure stage 1

Quantity	Designation	Calculation flow PWC $\dot{V}_R$ l/s	Calculation flow PWH $\dot{V}_R$ l/s	Total flow $\Sigma \dot{V}_R$ l/s	Peak flow $\dot{V}_S$ l/s	Percentage share taken into account %
Pcs						
60	Single-hole fitting including thermostat (10 l/min) for washbasin	0.07	0.07	8.40		
30	Concealed wall fitting including thermostat (22 l/min) for shower	0.15	0.15	9.00		
60	TECEprofil toilet module with Uni cistern, installation height 1120 mm	0.13	0.00	7.80		
1	FK-4 RPZ backflow preventer outlet type BA, DN 15	0.45	0.00	0.45		
6	GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm	0.00	0.00	0.00		



Type of utilisation: Residential building			25.65	1.80
1	FK-4 RPZ backflow preventer outlet type BA, DN 15	0.45	0.00	0.45
Largest consumer			0.45	0.45
Peak flow			1.80	
Continuous flow rate (withdrawal)			0.00	
Continuous flow rate (DEA)			0.00	
Total peak flow rate			1.80	

Flow path data sheet, area no.: 1, pressure level 1

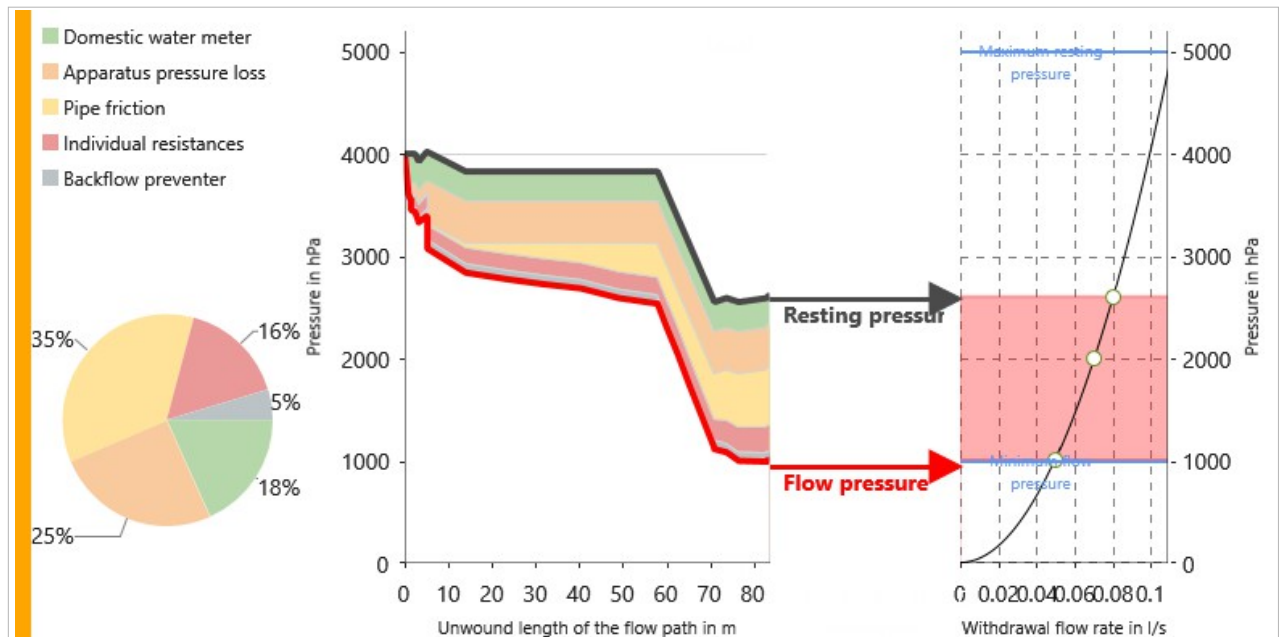
Consumers ENT 91	Location
Single-hole fitting including thermostat (10 l/min) for washbasin	- -
	

Floor No.				
1	Single-hole fitting including thermostat (10 l/min)	$p_{min,FI}$	1000.0	hPa
TS no.	Designation	Ref.	Value	Unit
	Minimum supply pressure or minimum pressure behind DEA / pressure reducer	$p_{min,V}$	4000.0	hPa
	Pressure loss in the house connection pipe	Δp_{HAL}	-	0.0 hPa
1	Pressure loss in the domestic water meter	Δp_{WZ}	-	292.1 hPa
	Minimum pressure behind the domestic water meter	$p_{min,WZ}$	=	3707.9 hPa
	Pressure loss from geodetic height difference	Δp_{geo}	-	1392.5 hPa
	Pressure loss in apparatus			
3	filter, DN 40	Δp_{FIL}	-	106.2 hPa
7	KTS water weater (M/L) PRO, stainless steel, single unit L, 120 l/min	Δp_{D-TE}	-	298.8 hPa
24	Minimum flow pressure at the tapping fitting	p_{minFL}	-	1000.0 hPa
	Available pressure difference in the flow path	Δp_v	=	910.4 hPa
	Length of the flow path	l_{ges}	83.80	m
	Average available pressure gradient	R_m	=	10.9 hPa/m
	Pressure loss from pipe friction	$\Sigma(I \cdot R)$	+	566.2 hPa
	Pressure loss from individual resistances	ΣZ	+	259.2 hPa
	Pressure loss from flow splitters	$\Sigma \Delta p_{St-Te}$	+	0.0 hPa
	Pressure loss from non-return valves and KFR valves	$\Sigma \Delta p_{Rück}$	+	73.9 hPa
	Pressure loss in the flow path	Δp	=	899.4 hPa
24	Flow pressure at the tapping fitting	p_{FL}	1011.0	hPa
	stagnant volume PWH < 55 °C		0.00	l
	Withdrawal volume flow		0.16	l/s
	Ejection time for stagnant volume PWH		0	s

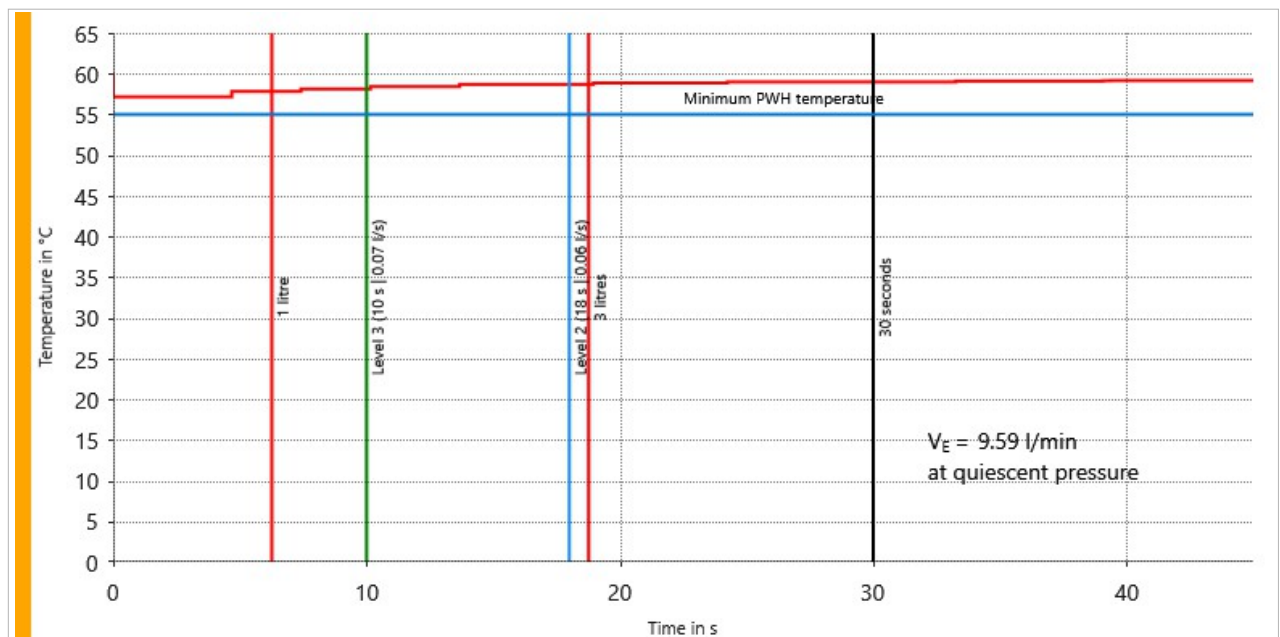
Comfort class according to VDI 6003

III

Pressure curve diagram



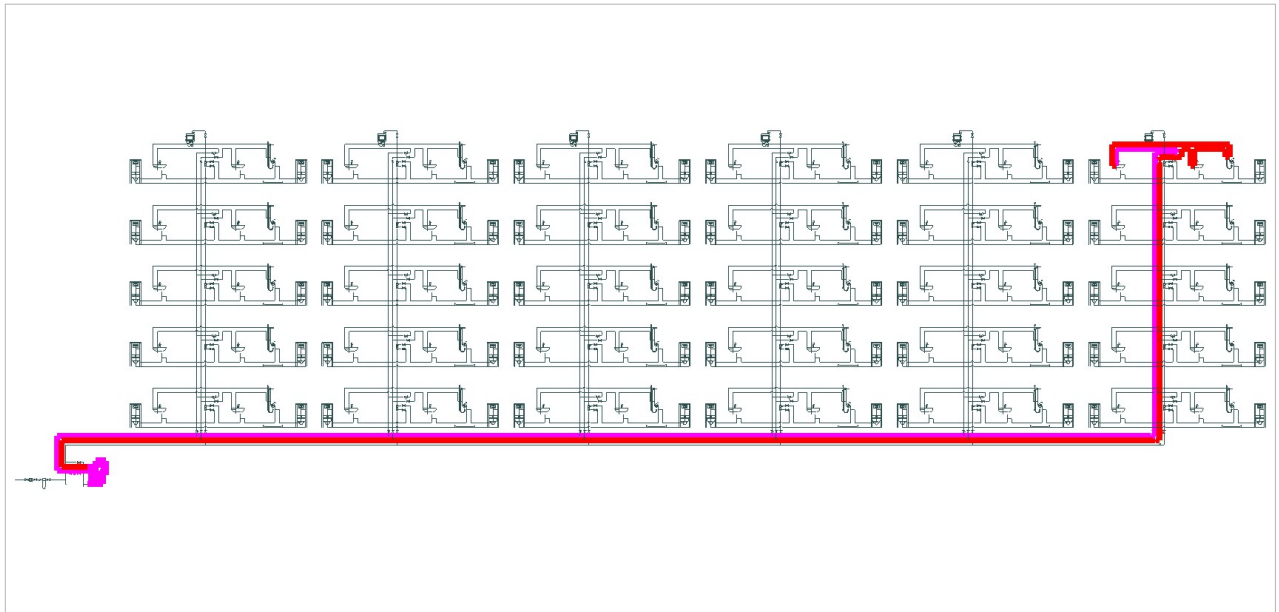
Tapping profile



Section table

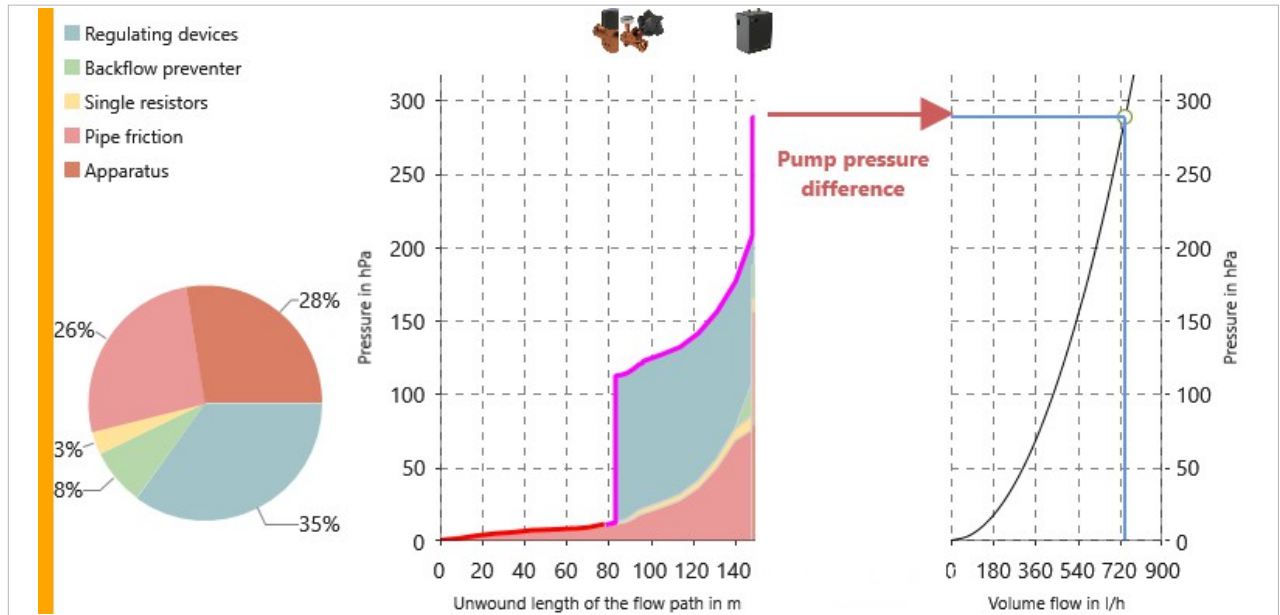
TS no. -	l m	TS type -	DN DN	d _i mm	D D%	$\dot{V}_S + \dot{V}_D$ l/s	v m/s	R hPa/m	l×R hPa	$\Sigma \zeta$ -	Z hPa	l×R+Z hPa
1	0.80	House connection pipe	40	44.0	0	1.80	1.18	3.6	2.9	13.1	91.8	94.7
2	0.40	Distribution pipework	40	39.0	167	1.80	1.51	6.3	2.5	0.1	1.0	49.6
3	0.20	Distribution pipework	40	39.0	167	1.80	1.51	6.3	1.3	0.1	1.0	2.3
4	1.00	Distribution pipework	40	39.0	167	1.80	1.51	6.3	6.3	1.7	19.9	26.2
5	0.80	Distribution pipework	40	39.0	167	1.79	1.50	6.2	5.0	1.1	12.6	17.6
6	1.80	Distribution pipework	40	39.0	167	1.29	1.08	3.5	6.3	1.6	9.3	43.4
7	0.20	Distribution pipework	40	39.0	167	1.29	1.08	3.5	0.7	1.2	6.8	7.5
8	8.80	Distribution pipework	40	39.0	111	1.29	1.08	2.7	24.1	2.4	14.0	38.1
9	8.80	Distribution pipework	32	32.0	121	1.22	1.51	6.4	56.0	0.4	3.9	59.9
10	8.80	Distribution pipework	32	32.0	121	1.13	1.40	5.5	48.8	0.3	2.6	51.4
11	8.80	Distribution pipework	32	32.0	121	1.02	1.26	4.6	40.5	0.3	2.1	42.7
12	8.80	Distribution pipework	25	25.6	121	0.87	1.69	10.2	90.0	0.4	4.9	94.9
13	8.70	Distribution pipework	25	25.6	121	0.65	1.26	6.0	52.2	0.2	1.7	53.9
14	0.10	Distribution pipework	25	25.6	121	0.65	1.26	6.0	0.6	0.3	2.7	3.3
15	1.80	Riser/downpipe	25	25.6	121	0.65	1.26	6.0	10.8	1.6	12.8	23.6
16	2.80	Riser/downpipe	25	25.6	121	0.58	1.13	5.0	13.9	0.2	1.0	14.9
17	2.80	Riser/downpipe	20	19.6	136	0.50	1.66	13.7	38.3	0.3	3.7	41.9
18	2.80	Riser/downpipe	20	19.6	136	0.39	1.31	8.9	24.9	0.2	1.5	26.4
19	2.70	Riser/downpipe	15	16.0	136	0.23	1.14	9.0	24.2	0.3	1.9	26.2
20	0.10	Riser/downpipe	15	16.0	136	0.23	1.14	9.0	0.9	1.4	9.1	10.0
21	2.80	Floor pipework	15	14.1	116	0.23	1.47	17.4	48.6	2.0	21.7	70.3
22	2.80	Floor pipework	15	14.1	116	0.17	1.09	10.0	28.1	2.8	16.3	44.4
23	7.20	Floor pipework	12	11.5	116	0.07	0.67	5.5	39.5	3.3	7.4	46.9
24	0.00	Single supply line	12	11.5		0.07	0.67	5.5	0.0	4.2	9.4	9.4

Circulation circuit no:279 (PWH-C), Pressure stage 1

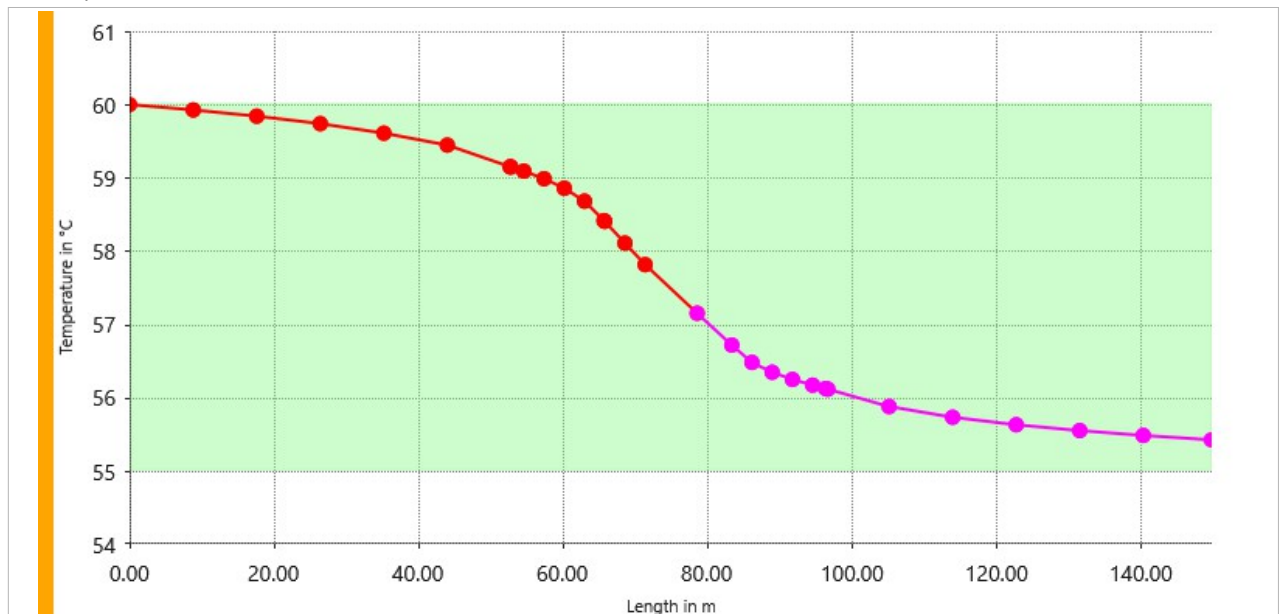
**Floor No.****279 Circulation circuit**

TS no.	Designation	Ref.	Value	Unit
	Pipe length (PWH)	l_{PWH}	78.60	m
	Pipe length (PWH-C)	l_{PWH-C}	+	71.20 m
	Pipe length	l_{ges}	=	149.80 m
	Pressure loss from pipe friction (PWH-C)	$\Sigma(I \cdot R)_{PWH-C}$	+	65.6 hPa
	Pressure loss from individual resistances (PWH-C)	ΣZ_{PWH-C}	+	8.5 hPa
	Pressure loss from non-return valves and KFR valves	$\Sigma \Delta p_{Rü, PWH-C}$	+	22.4 hPa
	Pressure loss in the circulation pipes	Δp_{PWH-C}	=	96.5 hPa
	Pressure loss from pipe friction (PWH)	$\Sigma(I \cdot R)_{PWH}$	+	9.9 hPa
	Pressure loss from individual resistances (PWH)	ΣZ_{PWH}	+	1.1 hPa
	Pressure loss from flow splitters(St-Te)	$\Sigma \Delta p_{St-Te}$	+	0.0 hPa
	Pressure loss from non-return valves and KFR valves	$\Sigma \Delta p_{Rück}$	+	0.0 hPa
	Pressure loss in the hot water pipes	Δp_{PWH}	=	11.0 hPa
642	KTS water weater (M/L) PRO, stainless steel, single unit L, 120 l/min	Δp_{D-TE}	+	80.0 hPa
654	ETA-THERM thermostatic balancing valve, union thread, 56 °C - 58 °C, DN 15	Δp_{ZRV}	+	99.9 hPa
649	MULTI-FIX-PLUS static balancing valve, union thread, DN 15	Δp_{ZRV}	+	1.1 hPa
	Pressure loss apparatus/regulating equipment	$\Delta p_{App, RV}$	=	181.0 hPa
	Delivery pressure of the circulation pump	Δp_P	=	288.5 hPa

Pressure curve diagram



Temperature curve



Sections

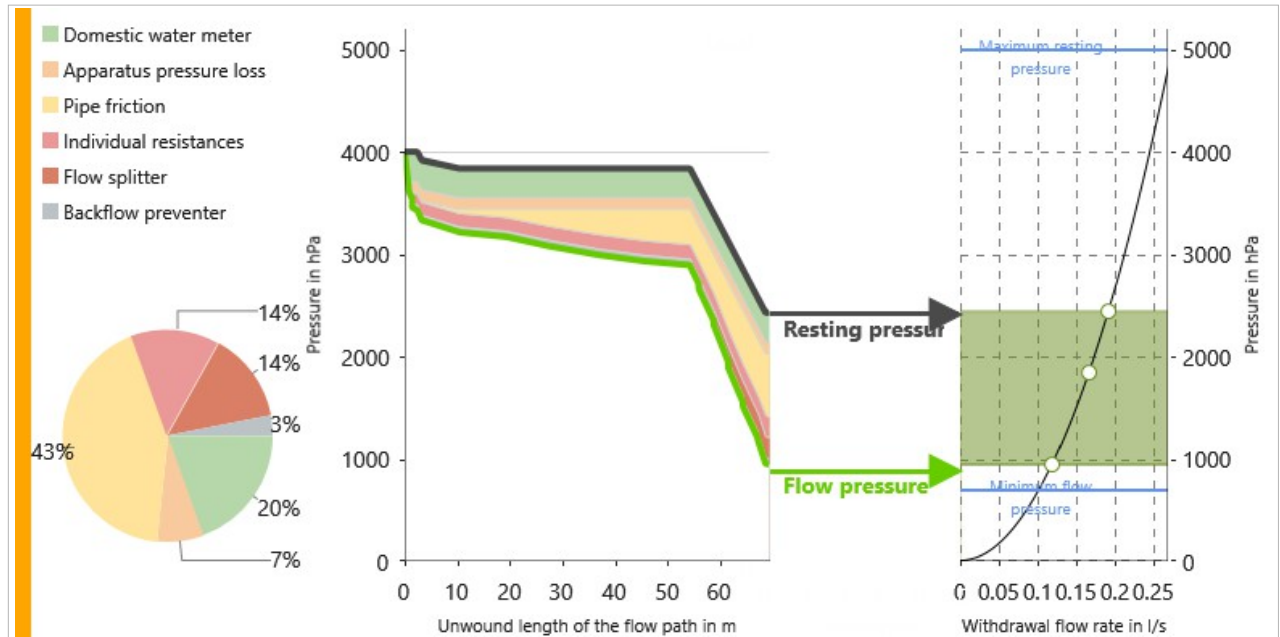
TS no. -	l m	TS type -	DN DN	d _i mm	D %	$\dot{V}_Z$ l/h	v m/s	R hPa/m	l×R hPa	$\Sigma\zeta$ -	Z hPa	l×R+Z hPa
8	8.80	Distribution pipework	40	39.0	111	743	0.17	0.11	0.9	2.4	0.4	1.3
9	8.80	Distribution pipework	32	32.0	121	637	0.22	0.21	1.8	0.4	0.1	1.9
10	8.80	Distribution pipework	32	32.0	121	527	0.18	0.15	1.3	0.3	0.0	1.4
11	8.80	Distribution pipework	32	32.0	121	412	0.14	0.10	0.9	0.3	0.0	0.9
12	8.80	Distribution pipework	25	25.6	121	290	0.16	0.15	1.3	0.4	0.0	1.4
13	8.70	Distribution pipework	25	25.6	121	157	0.08	0.05	0.5	0.2	0.0	0.5
14	0.10	Distribution pipework	25	25.6	121	157	0.08	0.05	0.0	0.3	0.0	0.0
15	1.80	Riser/downpipe	25	25.6	121	157	0.08	0.05	0.1	1.6	0.1	0.2
16	2.80	Riser/downpipe	25	25.6	121	132	0.07	0.04	0.1	0.2	0.0	0.1
17	2.80	Riser/downpipe	20	19.6	136	106	0.10	0.09	0.3	0.3	0.0	0.3
18	2.80	Riser/downpipe	20	19.6	136	77	0.07	0.06	0.2	0.2	0.0	0.2
19	2.70	Riser/downpipe	15	16.0	136	44	0.06	0.04	0.1	0.3	0.0	0.1
20	0.10	Riser/downpipe	15	16.0	136	44	0.06	0.04	0.0	1.4	0.0	0.0
21	2.80	Floor pipework	15	14.1	116	44	0.08	0.10	0.3	2.0	0.1	0.3
22	2.80	Floor pipework	15	14.1	116	44	0.08	0.10	0.3	2.8	0.1	0.4
23	7.20	Floor pipework	12	11.5	116	44	0.12	0.27	1.9	3.3	0.2	2.1
654	4.80	Floor pipework	12	11.5	116	44	0.12	0.27	1.3	3.8	0.3	1.5
653	2.80	Riser/downpipe	12	13.0	136	44	0.09	0.15	0.4	3.0	0.1	0.5
652	2.80	Riser/downpipe	12	13.0	136	77	0.16	0.38	1.1	3.0	0.4	1.4
651	2.80	Riser/downpipe	12	13.0	136	106	0.22	0.66	1.8	3.0	0.7	2.6
650	2.80	Riser/downpipe	12	13.0	136	132	0.28	0.96	2.7	1.5	0.5	3.2
649	1.80	Riser/downpipe	15	16.0	136	157	0.22	0.49	0.9	0.6	0.1	1.0
648	0.30	Distribution pipework	15	16.0	136	157	0.22	0.49	0.1	0.0	0.0	0.1
647	8.50	Distribution pipework	15	16.0	136	157	0.22	0.49	4.1	1.0	0.2	4.4
646	8.80	Distribution pipework	20	19.6	136	290	0.27	0.54	4.7	1.0	0.4	5.1
645	8.80	Distribution pipework	20	19.6	136	412	0.38	0.99	8.8	1.0	0.7	9.5
644	8.80	Distribution pipework	20	19.6	136	527	0.49	1.53	13.5	1.0	1.2	14.7
643	8.80	Distribution pipework	20	19.6	136	637	0.59	2.14	18.8	1.0	1.8	20.6
642	9.40	Distribution pipework	25	25.6	121	743	0.40	0.79	7.4	2.6	2.1	9.4

Flushing flow path data sheet, parcel no:26



Floor No.				
26 HS2 Hygienespülung mit 1 Anschluss		p_{minFL}	700.0 hPa	
TS no.	Designation	Ref.	Value	Unit
	Minimum supply pressure or minimum pressure behind DEA / pressure reducer	$p_{min,V}$	4000.0	hPa
	Pressure loss in the house connection pipe	Δp_{HAL}	-	0.0 hPa
1	Pressure loss in the domestic water meter	Δp_{WZ}	-	292.1 hPa
Minimum pressure behind the domestic water meter		$p_{min,WZ}$	=	3707.9 hPa
	Pressure loss from geodetic height difference	Δp_{geo}	-	1559.3 hPa
	Pressure loss in apparatus			
3	filter, DN 40	Δp_{D-TE}	-	106.2 hPa
	Pressure loss from flow splitters	$\Sigma \Delta p_{St-Te}$	+	206.4 hPa
	Pressure loss from non-return valves and KFR valves	$\Sigma \Delta p_{Rück}$	+	46.1 hPa
130	Flow pressure at the tapping fitting	p_{FL}		946.6 hPa
Pressure loss in the flow path		Δp	=	1095.8 hPa
Volume of the individual supply pipe			57.08	l
Ejection time PWC > 25 °C after stagnation of 5:00 hours				s
	Pressure loss from individual resistances	ΣZ	+	202.9 hPa
Average available pressure gradient		R_m	=	19.3 hPa/m
	Pressure loss from pipe friction	$\Sigma (l \cdot R)$	+	640.5 hPa
130	Minimum flow pressure at the tapping fitting	p_{minFL}	-	700.0 hPa
Available pressure difference in the flow path		Δp_v	=	1342.5 hPa
	Length of the flow path	l_{ges}		69.50 m

Pressure curve diagram for flushing flow path no:26



Sections for flushing flow path no.:26

TS no. -	l m	TS type -	DN DN	d _i mm	D D%	$\dot{V}_S + \dot{V}_D$ l/s	v m/s	R hPa/m	l×R hPa	$\Sigma \zeta$ -	Z hPa	l×R+Z hPa
1	0.80	House connection pipe	40	44.0	0	1.80	1.2	3.6	2.9	13.1	91.8	94.7
2	0.40	Distribution pipework	40	39.0	167	1.80	1.5	6.3	2.5	0.1	1.0	49.6
3	0.20	Distribution pipework	40	39.0	167	1.80	1.5	6.3	1.3	0.1	1.0	2.3
4	1.00	Distribution pipework	40	39.0	167	1.80	1.5	6.3	6.3	1.7	19.9	26.2
5	0.80	Distribution pipework	40	39.0	167	1.79	1.5	6.2	5.0	1.1	12.6	17.6
65	7.20	Distribution pipework	40	39.0	167	1.58	1.3	5.0	35.8	0.4	3.9	39.7
66	8.80	Distribution pipework	40	39.0	167	1.50	1.3	4.5	39.7	0.2	1.9	41.5
67	8.80	Distribution pipework	32	32.0	167	1.39	1.7	10.2	90.2	0.4	5.3	95.5
68	8.80	Distribution pipework	32	32.0	167	1.27	1.6	8.7	76.4	0.3	3.4	79.8
69	8.80	Distribution pipework	32	32.0	167	1.11	1.4	6.8	59.8	0.3	2.6	62.4
70	8.70	Distribution pipework	32	32.0	167	0.85	1.1	4.3	37.4	0.3	1.5	38.9
71	0.10	Distribution pipework	32	32.0	167	0.85	1.1	4.3	0.4	0.3	1.9	2.3
72	1.65	Riser/downpipe	32	32.0	167	0.85	1.1	4.3	7.1	1.3	7.5	14.6
73	0.10	Riser/downpipe	25	25.6	167	0.82	1.6	11.5	1.2	0.0	0.0	49.2
74	2.70	Riser/downpipe	25	25.6	167	0.78	1.5	10.6	28.6	0.2	2.3	30.9
75	0.10	Riser/downpipe	25	25.6	167	0.74	1.4	9.6	1.0	0.0	0.0	43.5
76	2.70	Riser/downpipe	20	19.6	167	0.69	2.3	30.5	82.3	0.2	5.2	87.5
77	0.10	Riser/downpipe	20	19.6	167	0.63	2.1	26.1	2.6	0.0	0.0	60.0
78	2.70	Riser/downpipe	20	19.6	167	0.57	1.9	21.7	58.5	0.2	3.5	62.0
79	0.10	Riser/downpipe	20	19.6	167	0.49	1.6	16.7	1.7	0.0	0.0	41.1
80	2.70	Riser/downpipe	20	19.6	167	0.38	1.3	10.7	29.0	0.2	1.6	30.6
81	0.10	Riser/downpipe	20	19.6	167	0.23	0.8	4.4	0.4	0.0	0.0	19.4
129	1.45	Single supply line	12	11.5	133	0.17	1.6	32.8	47.6	2.8	36.1	83.7
130	0.70	Single supply line	12	11.5	133	0.17	1.6	32.8	23.0	0.0	0.0	23.0

Section list

TS no.	Quantity	Designation	ζ	$\Sigma\zeta$
-	Pcs	-	-	-
	1	Peh Kupplung AG DN40	1.1	1.1
	1	gunmetal union connector, union nut, DN 40	0.0	0.0
	1	WESER stop valve, with plugged drain port, union thread, DN 40	2.7	2.7
	1	gunmetal union connector, union nut, DN 40	0.1	0.1
	1	Peh Kupplung AG DN40	1.1	1.1
	1	Peh reducer DN40/ DN32	1.9	1.9
	1	Peh coupling IG DN32	2.5	2.5
	1	Peh coupling IG DN32	2.5	2.5
	1	Peh reducer DN40/ DN32	0.0	0.0
	1	Peh Kupplung AG DN40	1.1	1.1
	1	Geberit Mapress Stainless Steel adaptor with female thread: d=42mm, Rp=1 1/2"	0.1	0.1
1				13.1
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.0	0.0
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.1	0.1
2				0.1
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.0	0.0
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.1	0.1
3				0.1
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.0	0.0
	1	WESER stop valve, with plugged drain port, union thread, DN 40	1.7	1.7
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.1	0.1
4				1.7
	1	Geberit Mapress Stainless Steel T-piece, equal: d=42mm	1.1	1.1
5				1.1
	1	Geberit Mapress Stainless Steel T-piece, equal: d=42mm	1.2	1.2
	1	Geberit Mapress Stainless Steel bend: 90°, d=42mm	0.3	0.3
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.0	0.0
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.1	0.1
6				1.6
	1	Geberit Mapress Stainless Steel T-piece, equal: d=42mm	1.2	1.2
7				1.2
	2	Geberit Mapress Stainless Steel bend: 90°, d=42mm	0.3	0.7
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.0	0.0
	1	WESER stop valve, with plugged drain port, union thread, DN 40	1.7	1.7
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 40	0.1	0.1
8				2.4

TS no.	Quantity	Designation	ζ	$\Sigma\zeta$
-	Pcs	-	-	-
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=42mm, d1=28mm, d2=42mm	0.2	0.2
	1	Geberit Mapress Stainless Steel reducer with plain end: d=42mm, d1=35mm	0.1	0.1
	1	Geberit Mapress Stainless Steel coupling: d=35mm	0.1	0.1
9				0.4
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=35mm, d1=28mm, d2=35mm	0.2	0.2
	1	Geberit Mapress Stainless Steel coupling: d=35mm	0.1	0.1
10				0.3
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=35mm, d1=28mm, d2=35mm	0.2	0.2
	1	Geberit Mapress Stainless Steel coupling: d=35mm	0.1	0.1
11				0.3
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=35mm, d1=28mm, d2=35mm	0.2	0.2
	1	Geberit Mapress Stainless Steel reducer with plain end: d=35mm, d1=28mm	0.1	0.1
	1	Geberit Mapress Stainless Steel coupling: d=28mm	0.1	0.1
12				0.4
	1	Geberit Mapress Stainless Steel T-piece, equal: d=28mm	0.1	0.1
	1	Geberit Mapress Stainless Steel coupling: d=28mm	0.1	0.1
13				0.2
	1	Geberit Mapress Stainless Steel bend: 90°, d=28mm	0.3	0.3
14				0.3
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 25	0.0	0.0
	1	WESER stop valve, with plugged drain port, union thread, DN 25	1.5	1.5
	1	pressfit union connector, MAPRESS stainless steel and copper, DN 25	0.1	0.1
15				1.6
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=28mm, d1=15mm, d2=28mm	0.2	0.2
16				0.2
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=28mm, d1=15mm, d2=28mm	0.2	0.2
	1	Geberit Mapress Stainless Steel reducer with plain end: d=28mm, d1=22mm	0.1	0.1
17				0.3
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=22mm, d1=15mm, d2=22mm	0.2	0.2
18				0.2
	1	Geberit Mapress Stainless Steel T-piece, reduced: d=22mm, d1=15mm, d2=22mm	0.2	0.2
	1	Geberit Mapress Stainless Steel reducer with plain end: d=22mm, d1=18mm	0.1	0.1
19				0.3
	1	Geberit Mapress Stainless Steel bend: 90°, d=18mm	0.4	0.4
	1	Geberit Mapress Stainless Steel adaptor with male thread: d=18mm, R=1/2"	0.1	0.1
	1	TECEflex female connectordim. 20 x Rp 1/2", silicon bronze	0.9	0.9
20				1.4
	1	TECEflex male connectordim. 20 x R 1/2", silicon bronze	0.9	0.9
	1	quarter turn stop valve, FPT, DN 15	0.2	0.2
	1	TECEflex male connectordim. 20 x R 1/2", silicon bronze	0.9	0.9
21				2.0
	1	TECEflex tee reduceddim. 20 x 16 x 20, silicon bronze	2.8	2.8
22				2.8

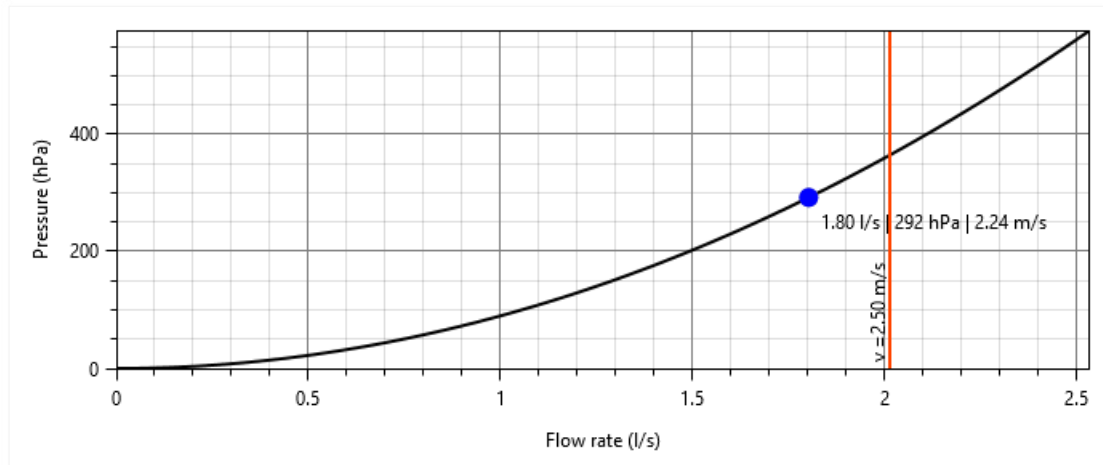
TS no.	Quantity	Designation	ζ	$\Sigma\zeta$
-	Pcs	-	-	-
	1	TECEflex tee reduceddim. 20 x 16 x 20, silicon bronze	2.8	2.8
	1	TECEflex couplingdim. 16 x 16, silicon bronze	0.5	0.5
23				3.3
	1	TECEflex teedim. 16 x 16 x 16, silicon bronze	2.5	2.5
	1	TECEflex wall diskdim. 16 x Rp 1/2", silicon bronze	1.7	1.7
24				4.2

Characteristic curves of the appliances and regulating valves

TS no.	Designation	Value	Unit
1	Wasserzähler	292.05	hPa



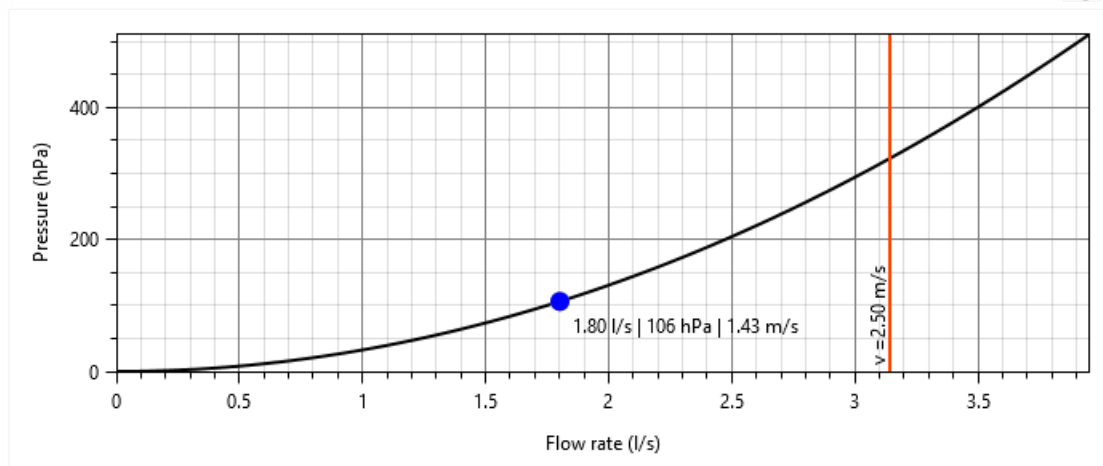
Impeller meter, Q3 = 10
DN32



TS no.	Designation	Value	Unit
3	Filter	106.20	hPa



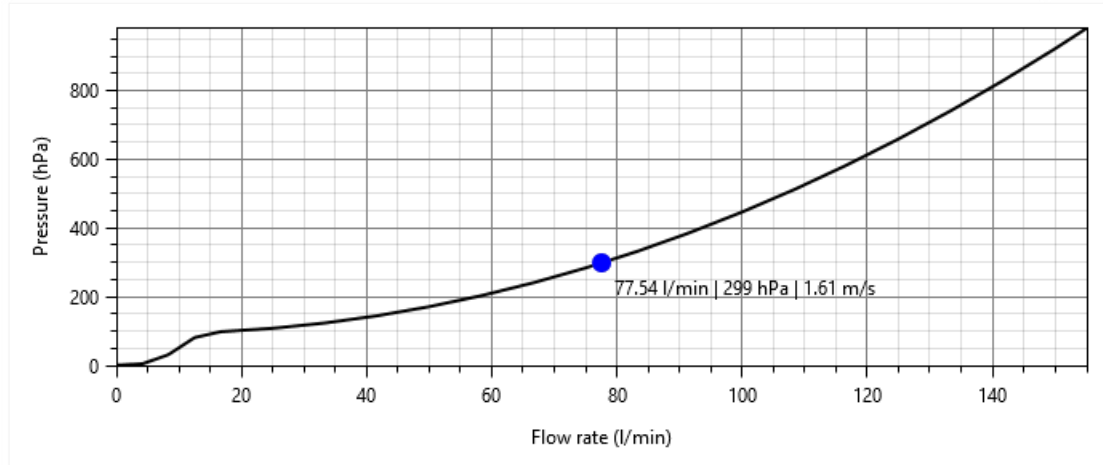
filter, DN 40



TS no.	Designation	Value	Unit
7	KTS Frischwasserstation	298.84	hPa



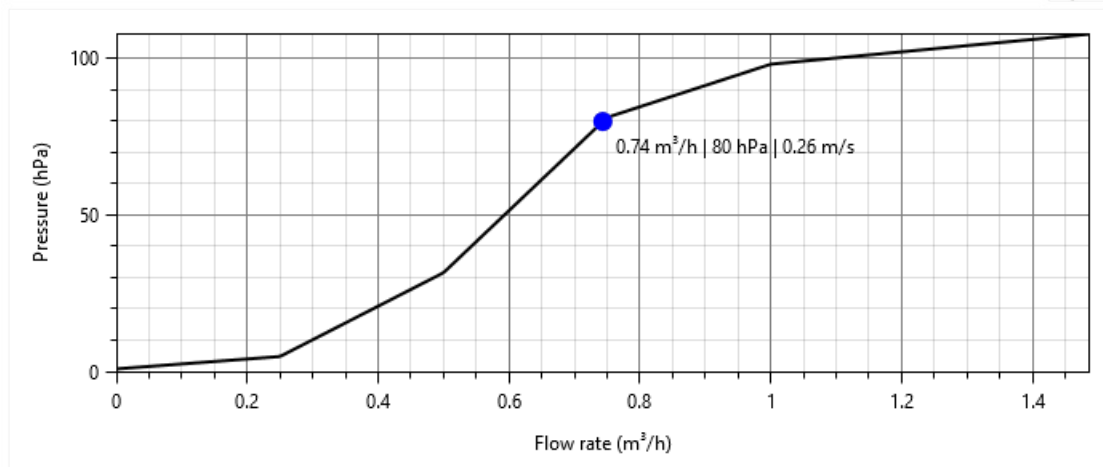
KTS water weater (M/L) PRO, stainless steel, single unit L, 120 l/min



TS no.	Designation	Value	Unit
642	KTS Frischwasserstation	79.95	hPa

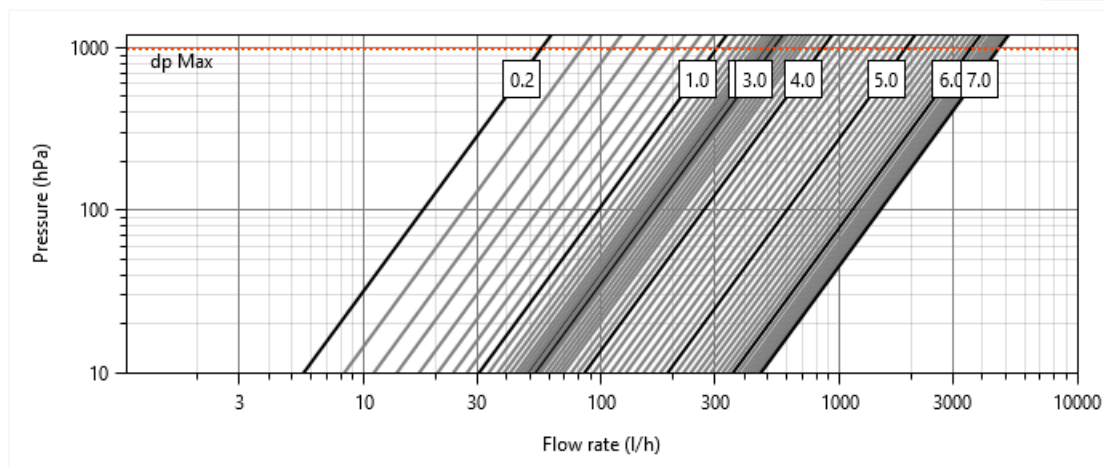


KTS water weater (M/L) PRO, stainless steel, single unit L, 120 l/min



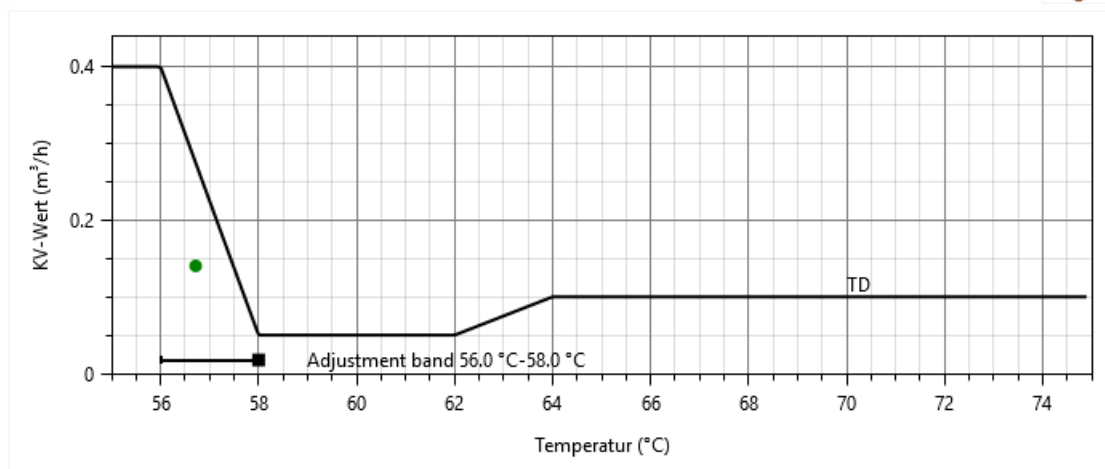
TS no.	Designation	Value	Unit
649	Strangregulierungsventil (Multifix)	1.12	hPa

MULTI-FIX-PLUS static balancing valve, union thread, DN 15



TS no.	Designation	Value	Unit
654	Autom. Stockwerksregulierungsventil (Etatherm)	99.92	hPa

ETA-THERM thermostatic balancing valve, union thread, 56 °C
- 58 °C, DN 15



PWC flow splitter

PWC flow splitter overview

Product information

TS. no.	Nominal size Flow splitter	Nominal diameter ring	Pipe material ring	Length ring	Zeta total	Min turbulent	Number of WCs downstream	Number of WC flushes required for water exchange	V Flushing
				m		l/s			l/s
73	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	8	3	0.17
75	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	6	3	0.17
77	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	4	3	0.17
79	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	2	3	0.17
81	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07			0.17
97	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	8	3	0.17
99	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	6	3	0.17
101	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	4	3	0.17
103	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	2	3	0.17
105	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07			0.17
148	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	8	3	0.17
150	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	6	3	0.17
152	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	4	3	0.17
154	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	2	3	0.17
156	DN 15	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.04			0.17
213	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	8	3	0.17
215	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	6	3	0.17

Product information

TS. no.	Nominal size Flow splitter	Nominal diameter ring	Pipe material ring	Length ring	Zeta total	Min turbulent	Number of WCs downstream	Number of WC flushes required for water exchange	V Flushing
				m		l/s			l/s
217	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	4	3	0.17
219	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	2	3	0.17
221	DN 15	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.04			0.17
304	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	8	3	0.17
306	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	6	3	0.17
308	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	4	3	0.17
310	DN 15	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.04	2	3	0.17
312	DN 15	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.04			0.17
414	DN 25	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.06	8	3	0.17
416	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	6	3	0.17
418	DN 20	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.07	4	3	0.17
420	DN 15	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.04	2	3	0.17
422	DN 15	DN 15	TECEflex composite pipe PE-Xc/Al/PE-RTdim. 20, 5 m rod	22.70	35.2	0.04			0.17

PWC flow splitter details

TS 73



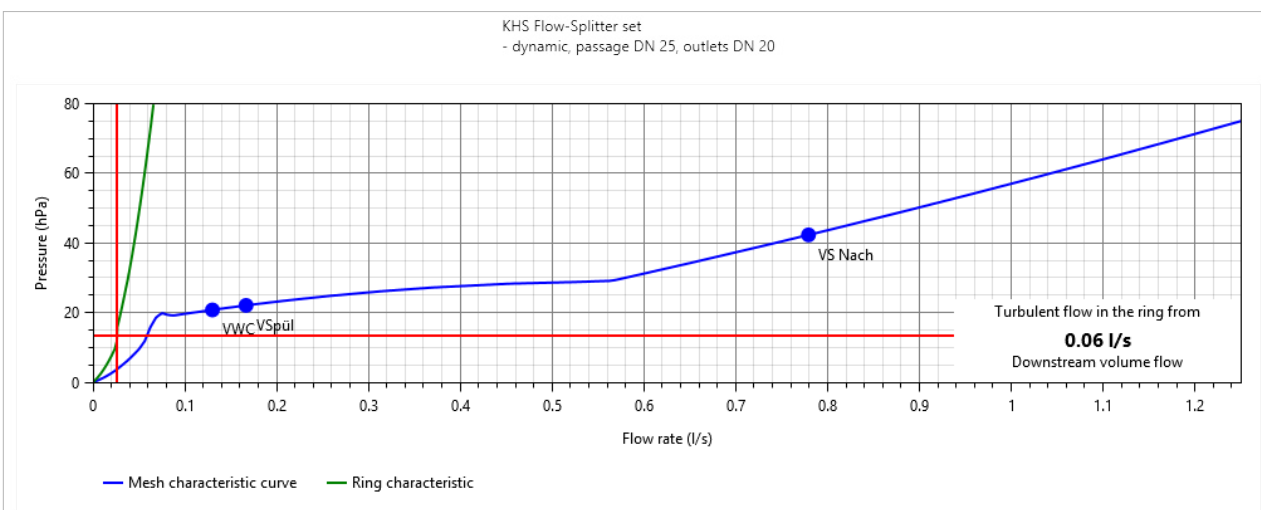
Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	8



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.78	100
V _{Passage}	0.10	76	0.13	81	0.73	94
V _{Ring}	0.03	24	0.03	19	0.05	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

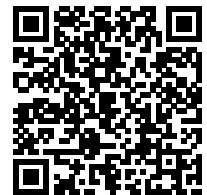
TS 75



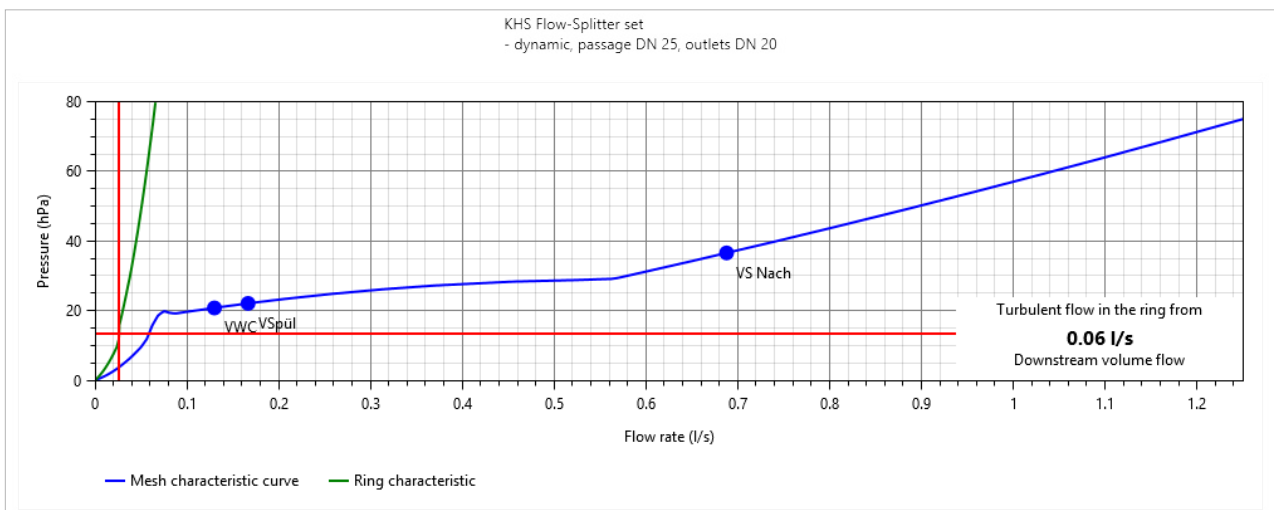
Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	6



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.69	100
V _{Passage}	0.10	76	0.13	81	0.65	94
V _{Ring}	0.03	24	0.03	19	0.04	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 77



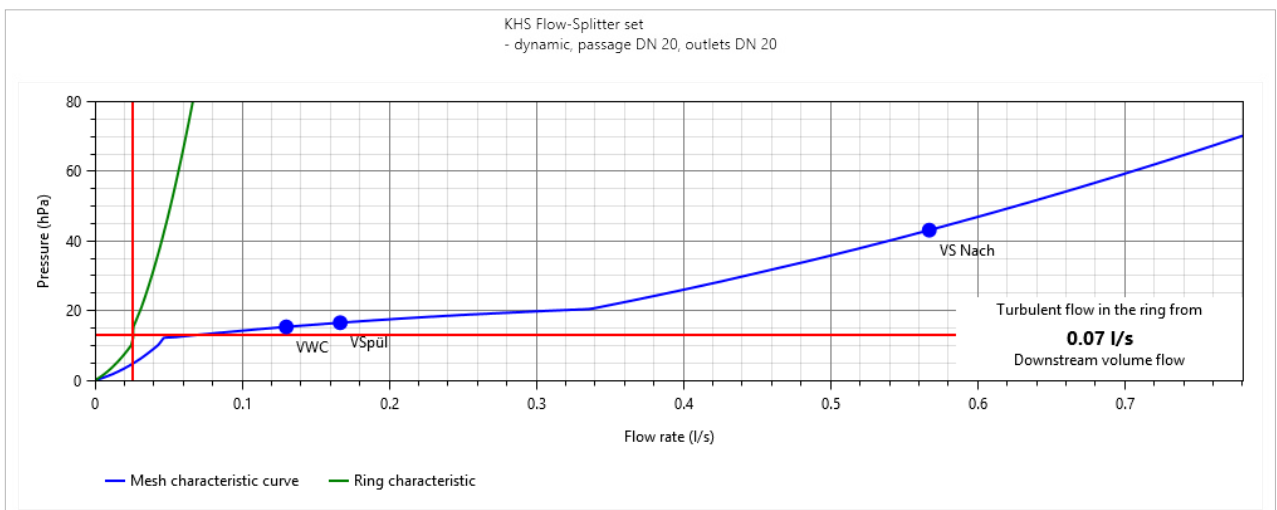
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	4



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.57	100
V _{Passage}	0.10	80	0.14	84	0.52	92
V _{Ring}	0.03	20	0.03	16	0.05	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 79



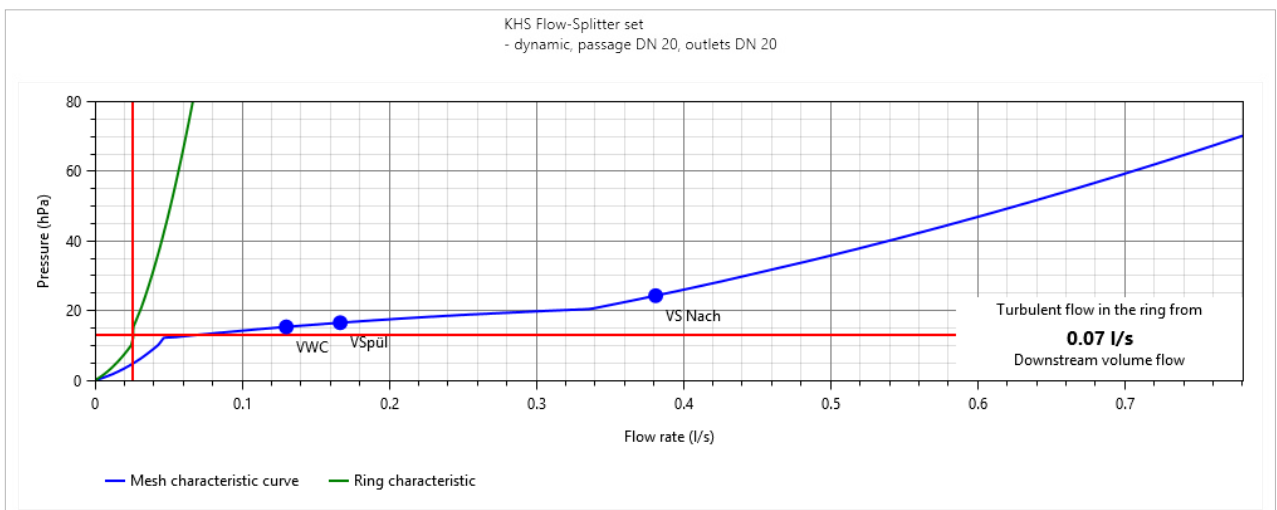
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	2



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.38	100
V _{Passage}	0.10	80	0.14	84	0.35	91
V _{Ring}	0.03	20	0.03	16	0.03	9
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 81



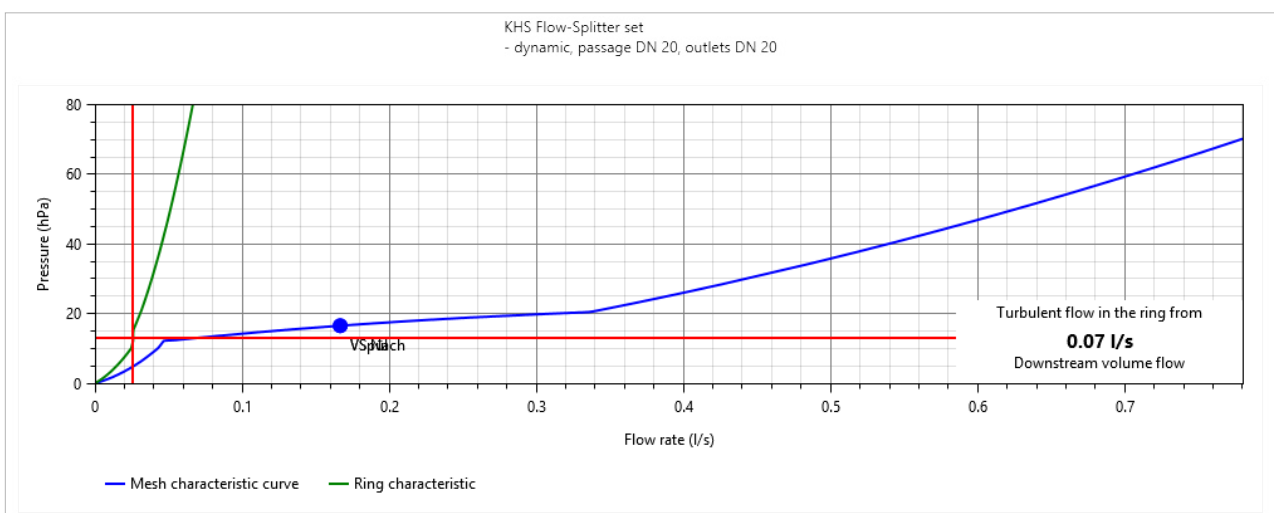
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	
Number of WCs downstream	



Characteristic curve



Operating points

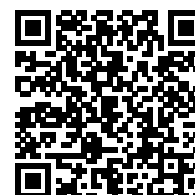
	V_{WC}		V_{Flush}		V_{to}	
	l/s	%	l/s	%	l/s	%
$V_{downstream}$			0.17	100	0.17	100
$V_{Passage}$			0.14	84	0.14	84
V_{Ring}			0.03	16	0.03	16
Products			GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
			 			

TS 97

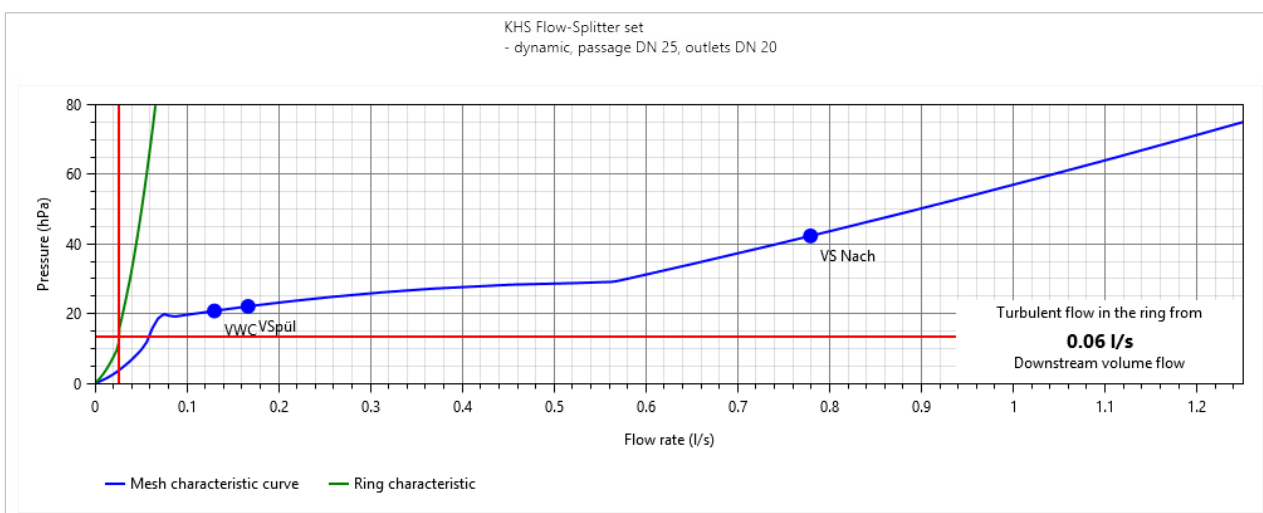
 Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	8



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.78	100
V _{Passage}	0.10	76	0.13	81	0.73	94
V _{Ring}	0.03	24	0.03	19	0.05	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 99



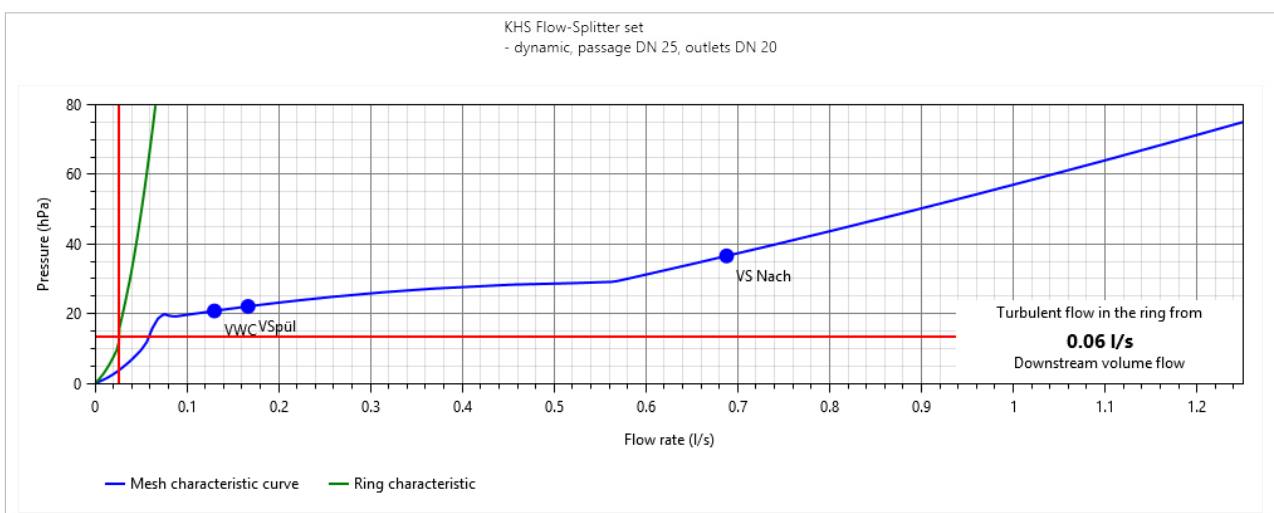
Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	6



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.69	100
V _{Passage}	0.10	76	0.13	81	0.65	94
V _{Ring}	0.03	24	0.03	19	0.04	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 101



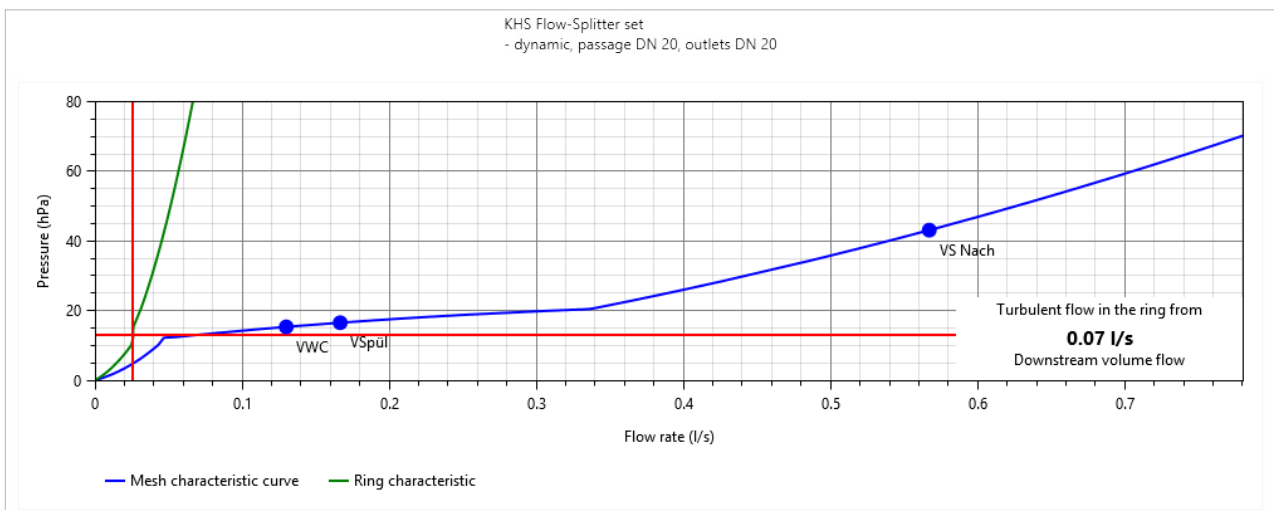
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	4



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.57	100
V _{Passage}	0.10	80	0.14	84	0.52	92
V _{Ring}	0.03	20	0.03	16	0.05	8
Products	TECEprofil toilet module withUni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 103



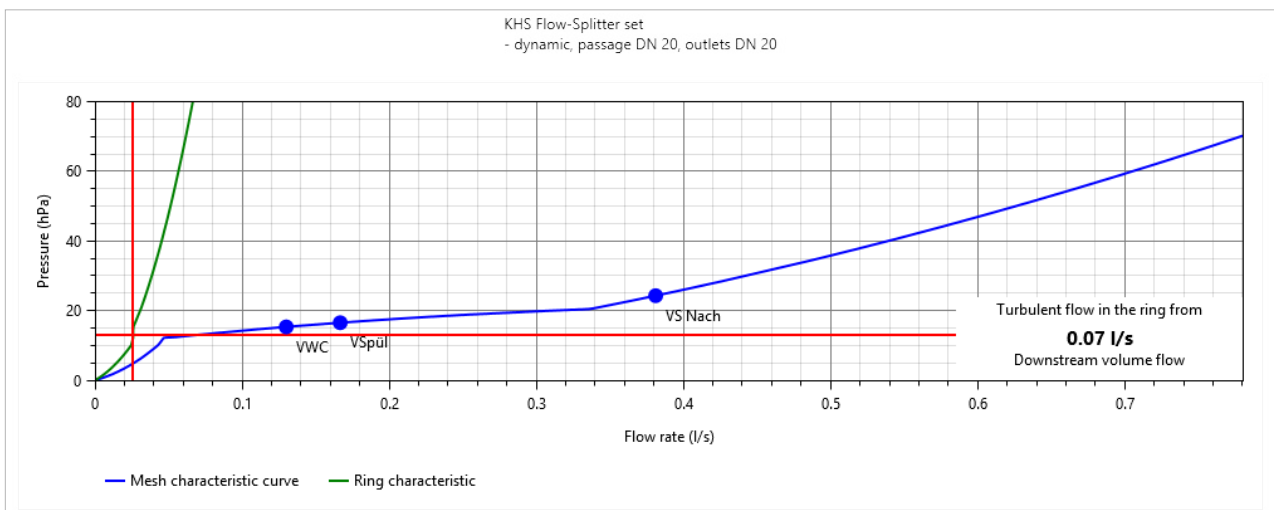
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	2



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.38	100
V _{Passage}	0.10	80	0.14	84	0.35	91
V _{Ring}	0.03	20	0.03	16	0.03	9
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 105



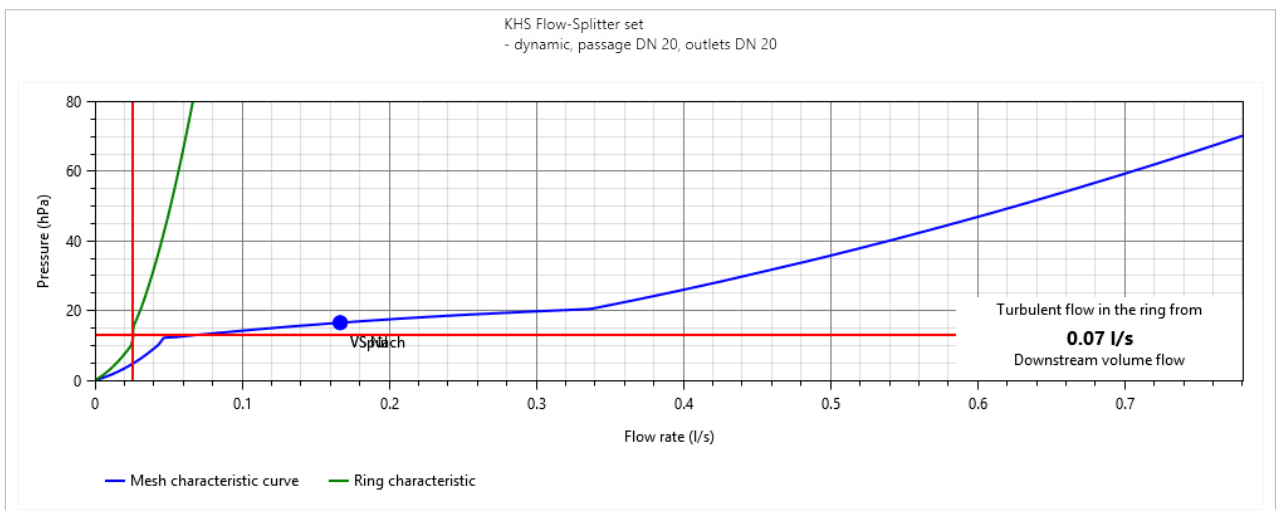
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	
Number of WCs downstream	



Characteristic curve



Operating points

	V_{WC}		V_{Flush}		V_{to}	
	l/s	%	l/s	%	l/s	%
$V_{downstream}$			0.17	100	0.17	100
$V_{Passage}$			0.14	84	0.14	84
V_{Ring}			0.03	16	0.03	16
Products			GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
			 			

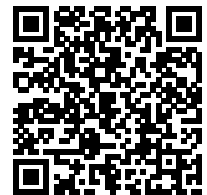
TS 148



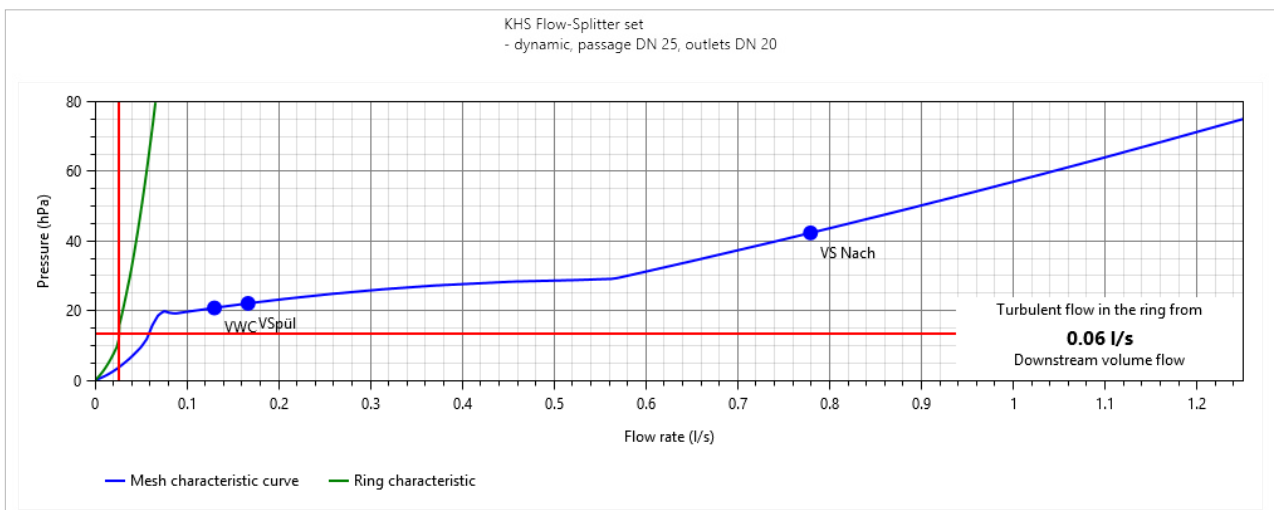
Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	8



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.78	100
V _{Passage}	0.10	76	0.13	81	0.73	94
V _{Ring}	0.03	24	0.03	19	0.05	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 150



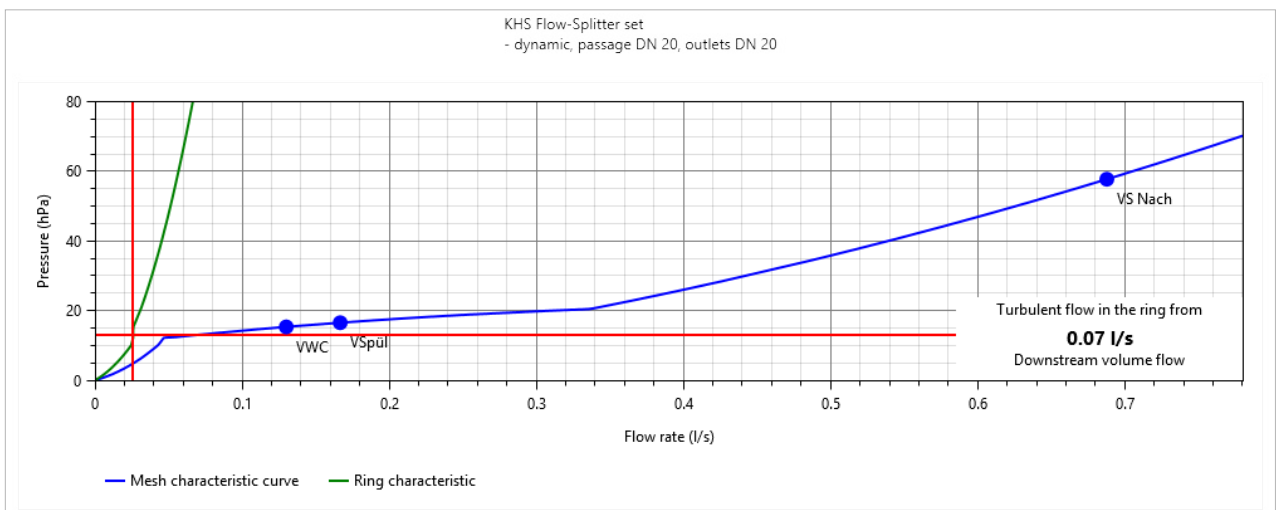
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	6



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.69	100
V _{Passage}	0.10	80	0.14	84	0.63	92
V _{Ring}	0.03	20	0.03	16	0.06	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 152



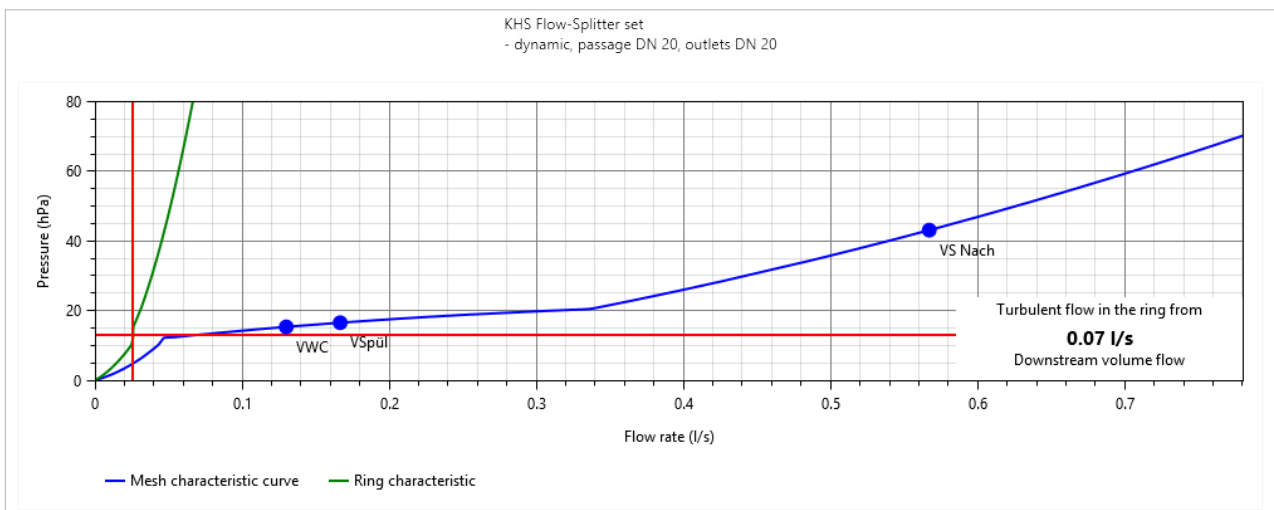
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	4



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.57	100
V _{Passage}	0.10	80	0.14	84	0.52	92
V _{Ring}	0.03	20	0.03	16	0.05	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 154



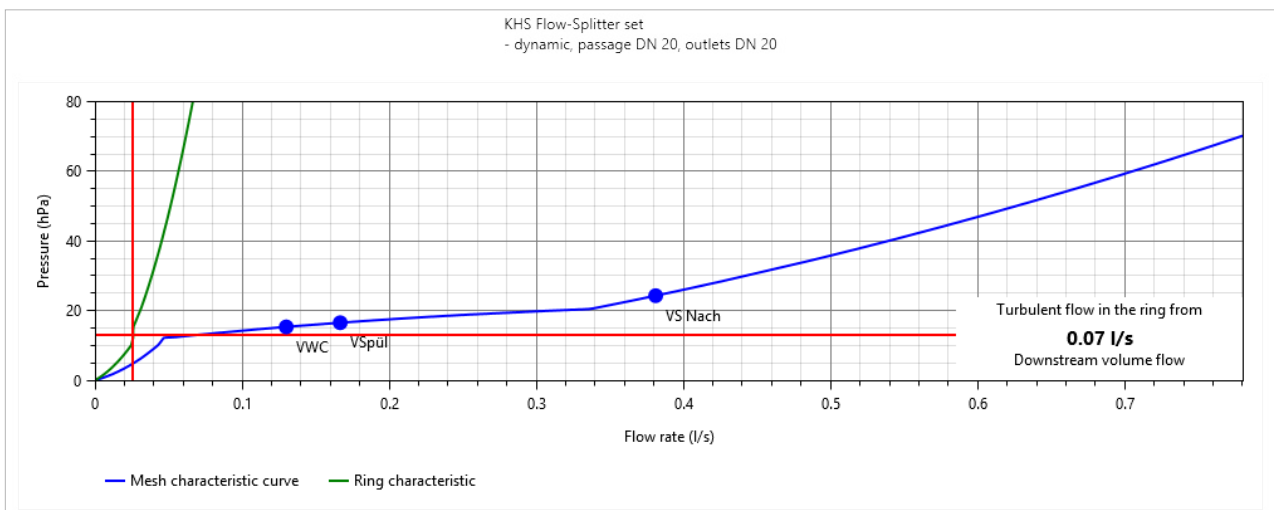
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	2



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.38	100
V _{Passage}	0.10	80	0.14	84	0.35	91
V _{Ring}	0.03	20	0.03	16	0.03	9
Products	TECEprofil toilet module withUni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 156



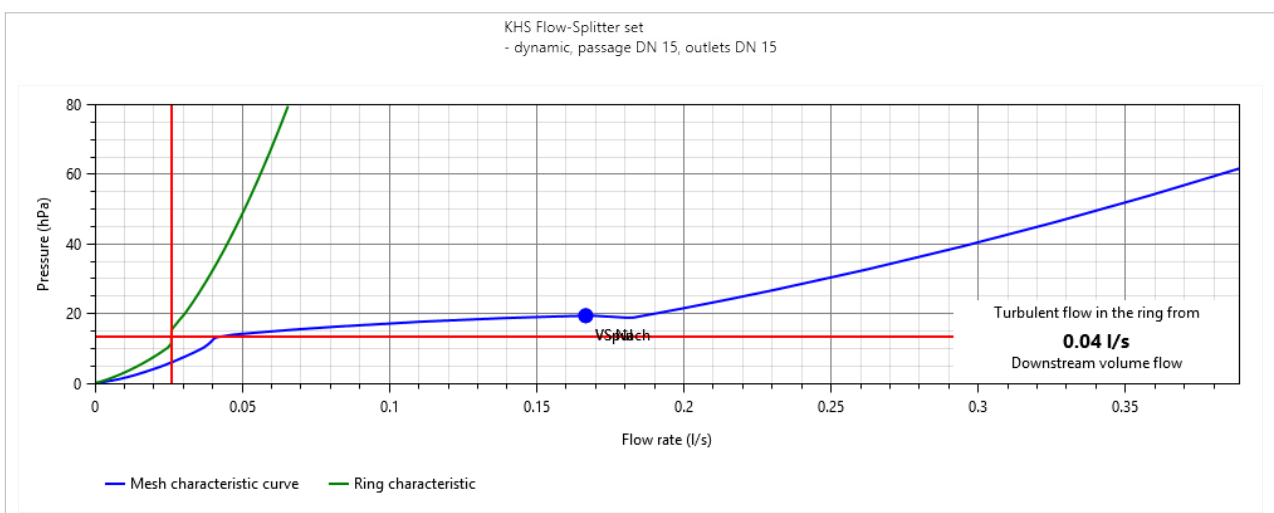
Turbulent flow in the ring from
0.04 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 15, outlets DN 15
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	
Number of WCs downstream	



Characteristic curve



Operating points

	V_{WC}		V_{Flush}		V_{to}	
	l/s	%	l/s	%	l/s	%
$V_{downstream}$			0.17	100	0.17	100
$V_{Passage}$			0.14	82	0.14	82
V_{Ring}			0.03	18	0.03	18
Products			GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
			 			

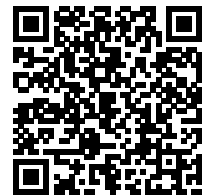
TS 213



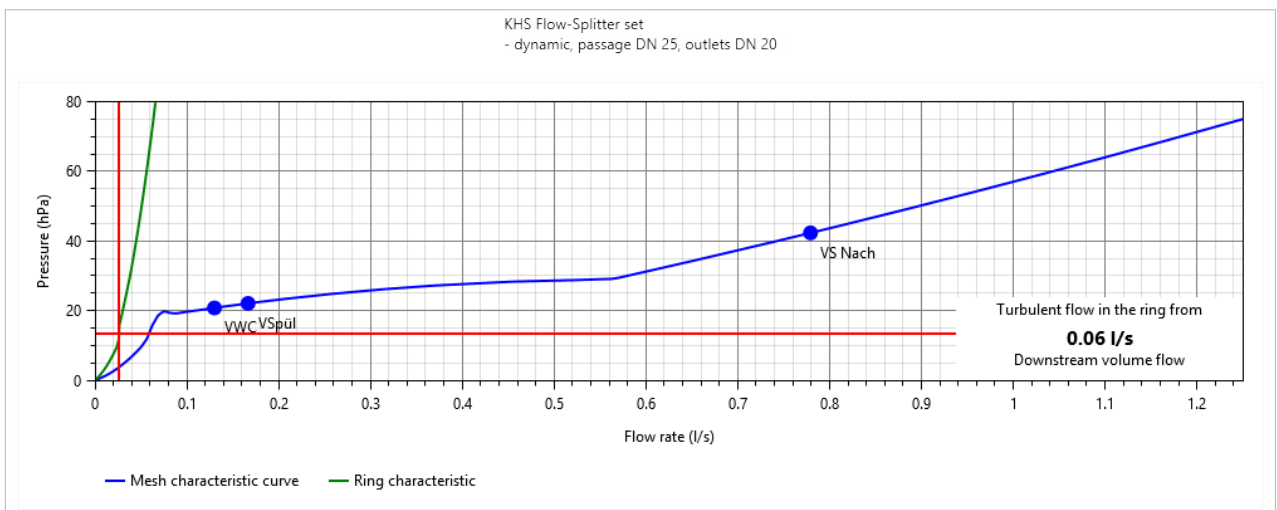
Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	8



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.78	100
V _{Passage}	0.10	76	0.13	81	0.73	94
V _{Ring}	0.03	24	0.03	19	0.05	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 215



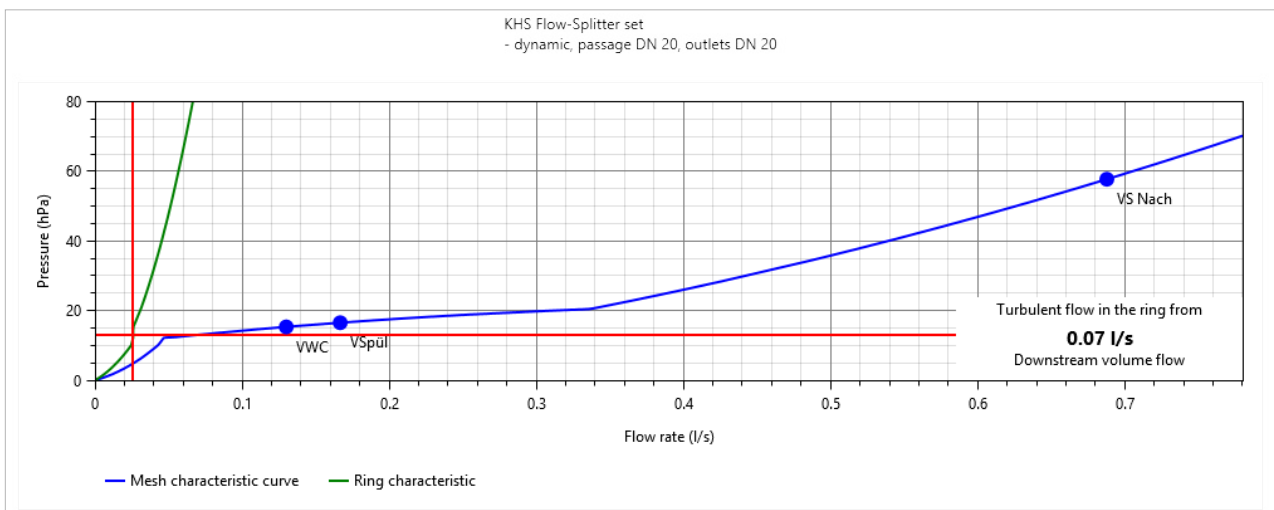
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	6



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.69	100
V _{Passage}	0.10	80	0.14	84	0.63	92
V _{Ring}	0.03	20	0.03	16	0.06	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 217



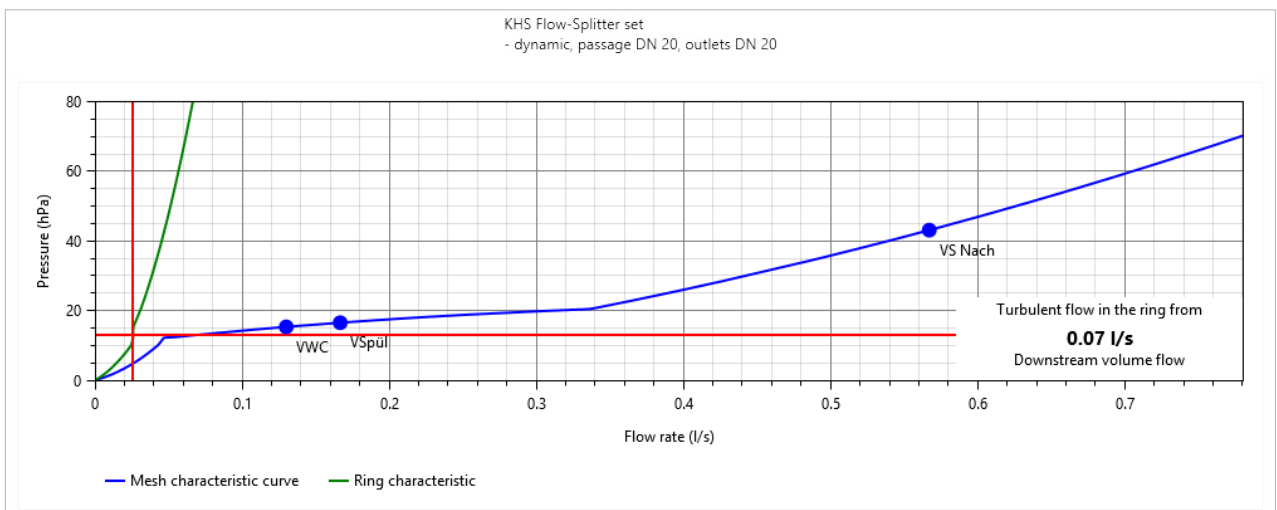
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	4



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.57	100
V _{Passage}	0.10	80	0.14	84	0.52	92
V _{Ring}	0.03	20	0.03	16	0.05	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 219



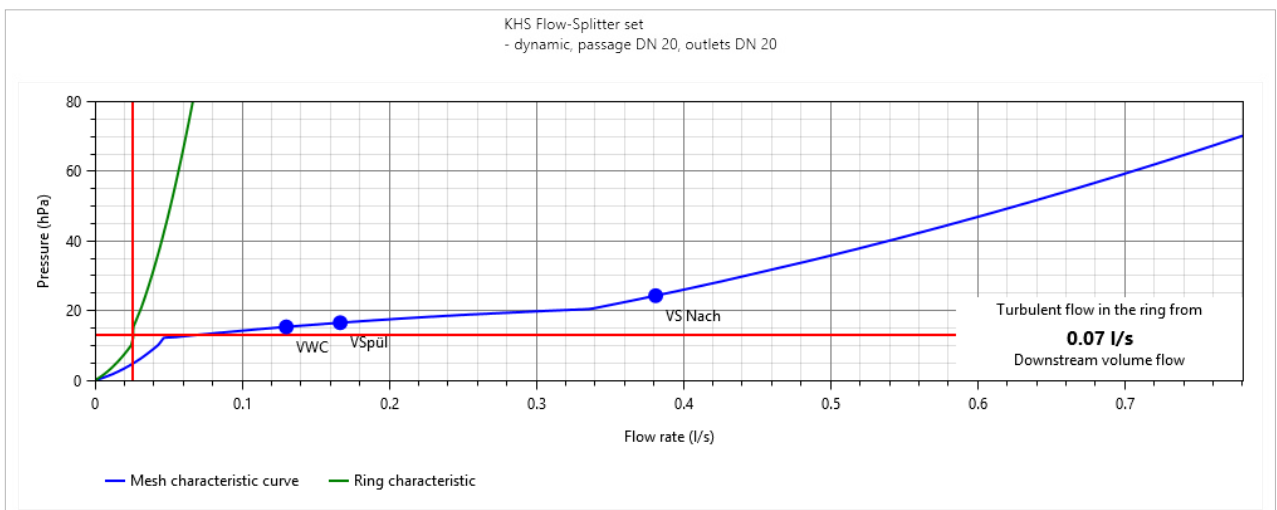
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	2



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.38	100
V _{Passage}	0.10	80	0.14	84	0.35	91
V _{Ring}	0.03	20	0.03	16	0.03	9
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 221



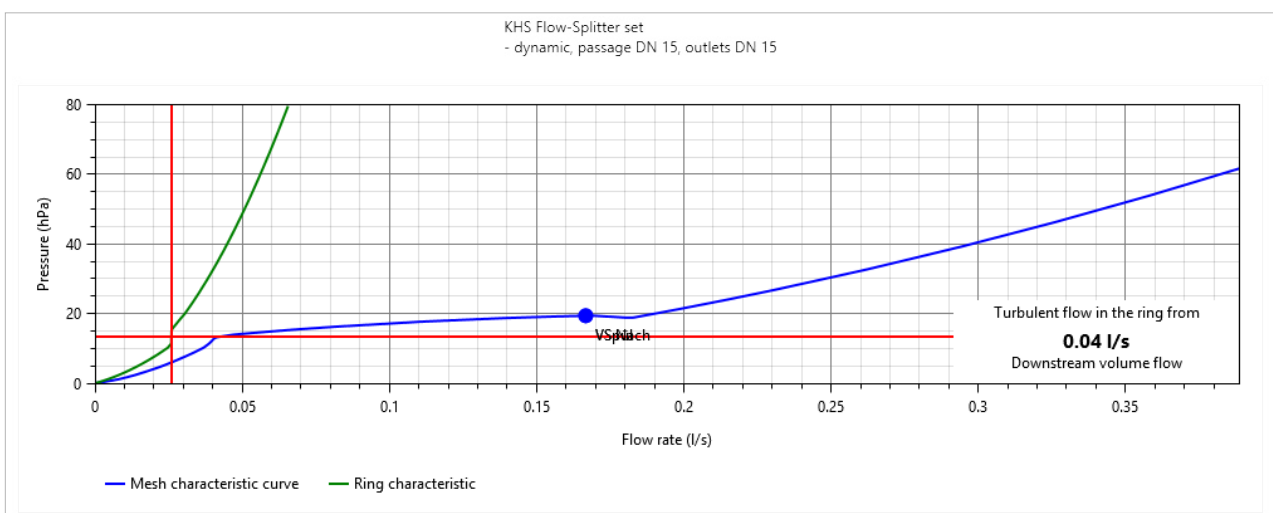
Turbulent flow in the ring from
0.04 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 15, outlets DN 15
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	
Number of WCs downstream	



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}			0.17	100	0.17	100
V _{Passage}			0.14	82	0.14	82
V _{Ring}			0.03	18	0.03	18
Products			GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
			 			

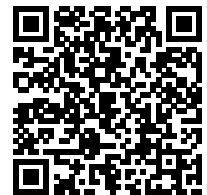
TS 304



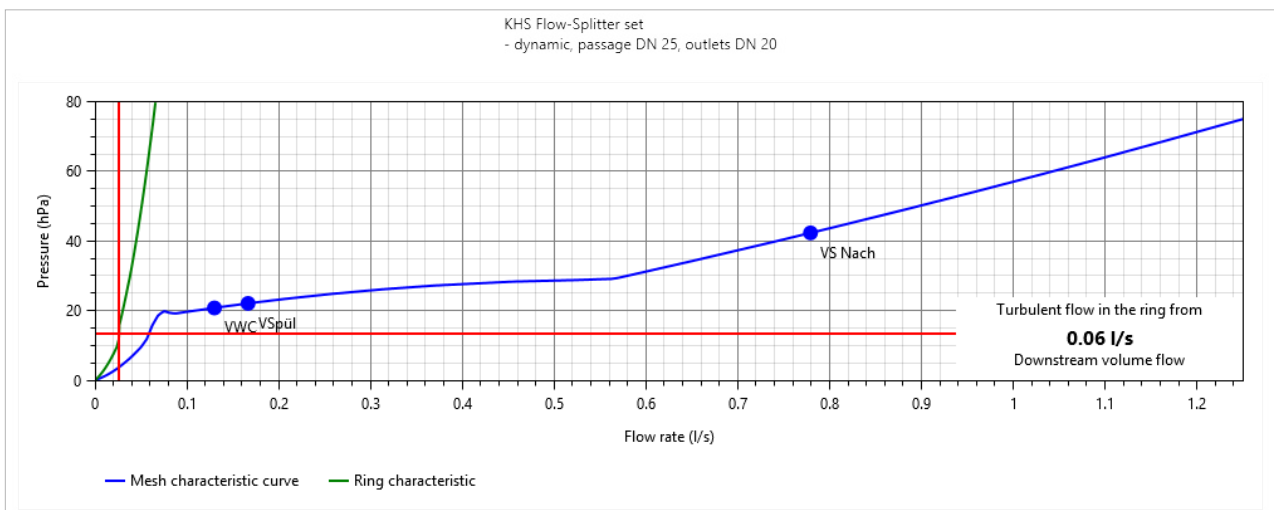
Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	8



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.78	100
V _{Passage}	0.10	76	0.13	81	0.73	94
V _{Ring}	0.03	24	0.03	19	0.05	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 306



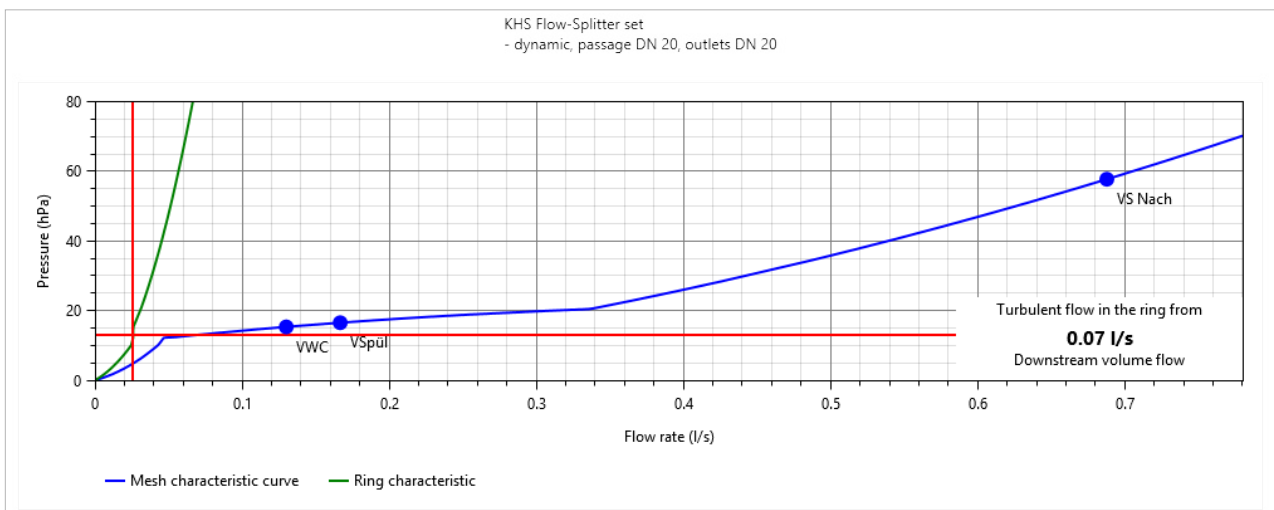
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	6



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.69	100
V _{Passage}	0.10	80	0.14	84	0.63	92
V _{Ring}	0.03	20	0.03	16	0.06	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 308



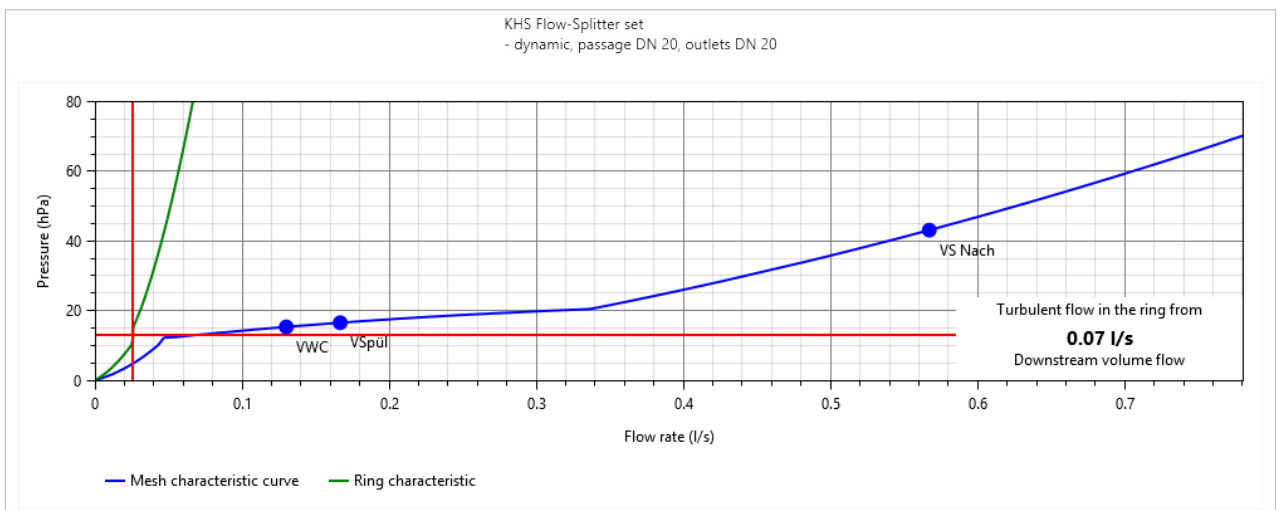
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	4



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.57	100
V _{Passage}	0.10	80	0.14	84	0.52	92
V _{Ring}	0.03	20	0.03	16	0.05	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 310



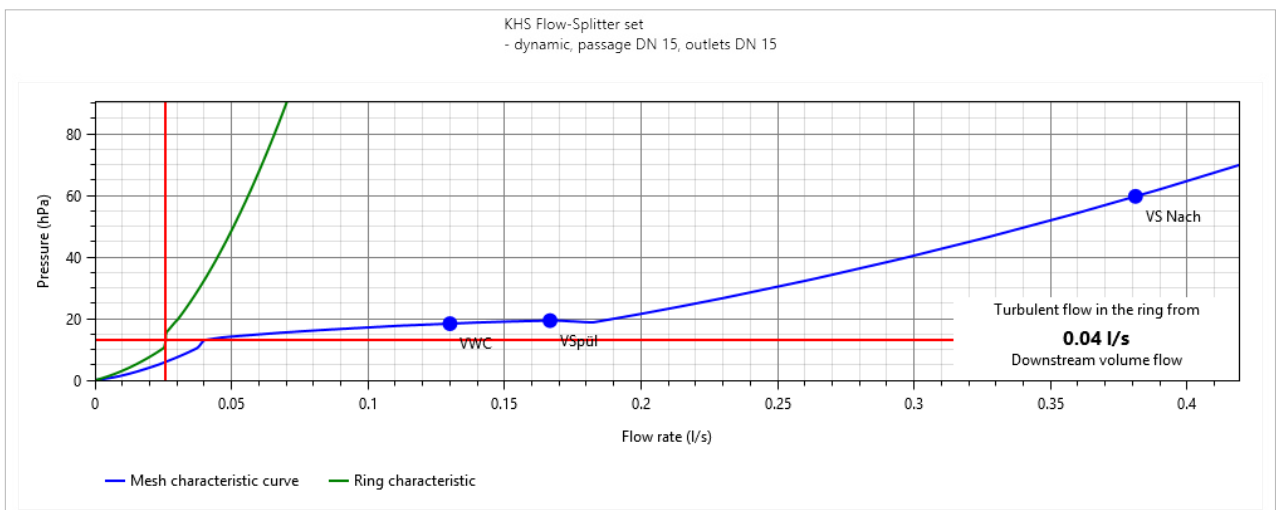
Turbulent flow in the ring from
0.04 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 15, outlets DN 15
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	2



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.38	100
V _{Passage}	0.10	78	0.14	82	0.33	85
V _{Ring}	0.03	22	0.03	18	0.06	15
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 312



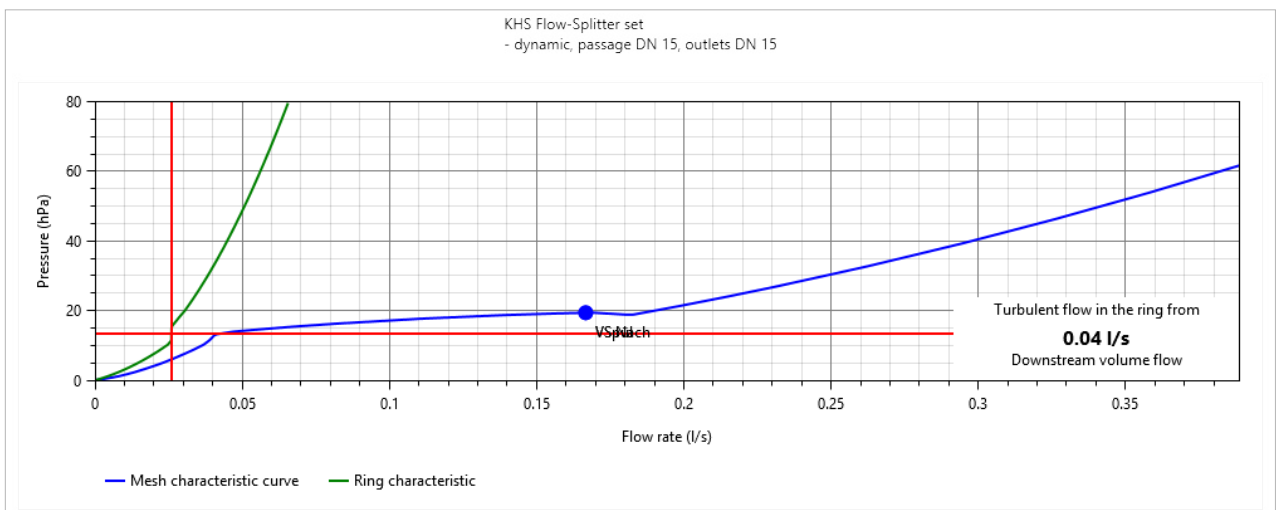
Turbulent flow in the ring from
0.04 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 15, outlets DN 15
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	
Number of WCs downstream	



Characteristic curve



Operating points

	V_{WC}		V_{Flush}		V_{to}	
	l/s	%	l/s	%	l/s	%
$V_{downstream}$			0.17	100	0.17	100
$V_{Passage}$			0.14	82	0.14	82
V_{Ring}			0.03	18	0.03	18
Products			GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
			 			

TS 414

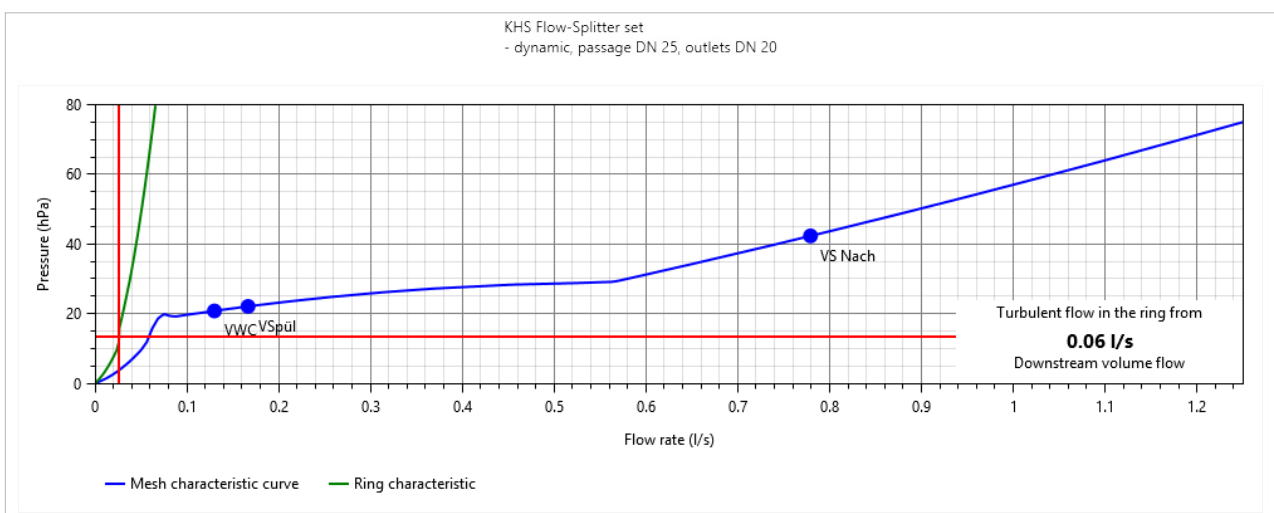
 Turbulent flow in the ring from
0.06 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 25, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	8



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.78	100
V _{Passage}	0.10	76	0.13	81	0.73	94
V _{Ring}	0.03	24	0.03	19	0.05	6
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
						

TS 416



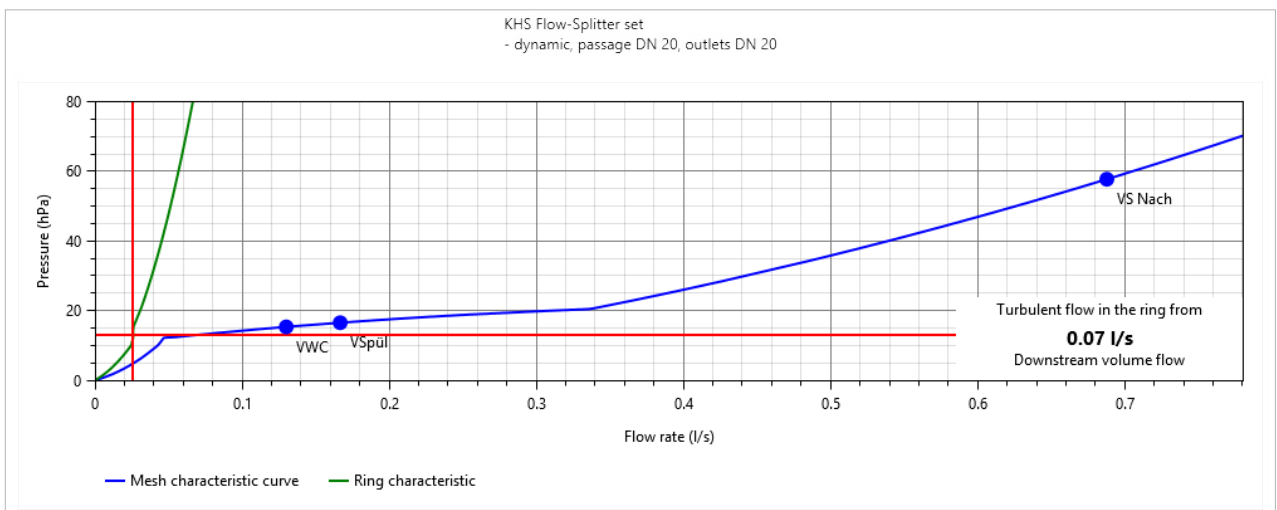
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	6



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.69	100
V _{Passage}	0.10	80	0.14	84	0.63	92
V _{Ring}	0.03	20	0.03	16	0.06	8
Products	TECEprofil toilet module withUni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 418



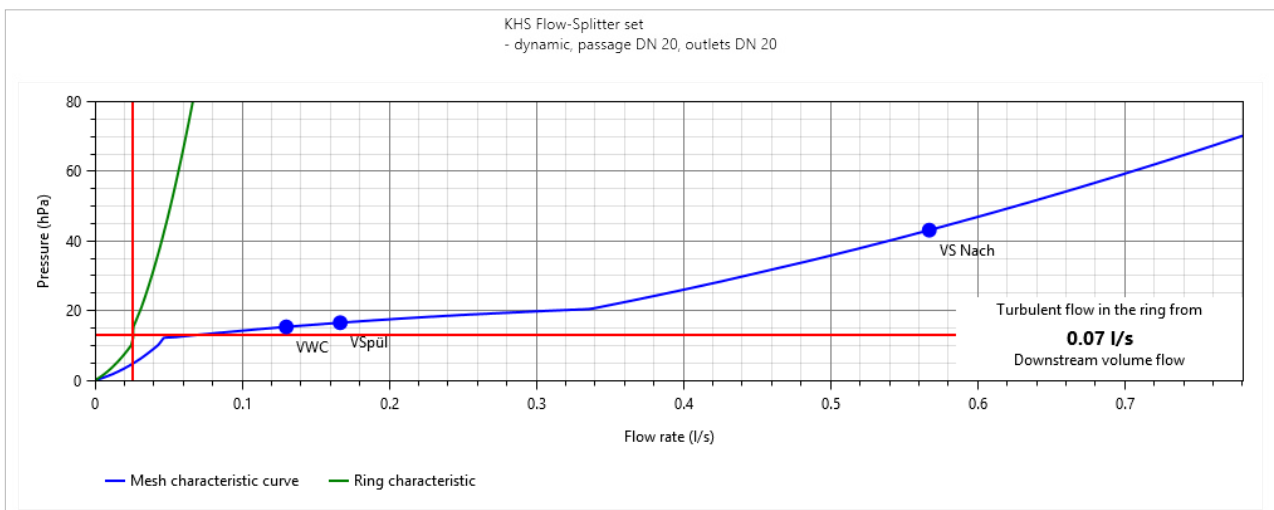
Turbulent flow in the ring from
0.07 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 20, outlets DN 20
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	4



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.57	100
V _{Passage}	0.10	80	0.14	84	0.52	92
V _{Ring}	0.03	20	0.03	16	0.05	8
Products	TECEprofil toilet module with Uni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 420



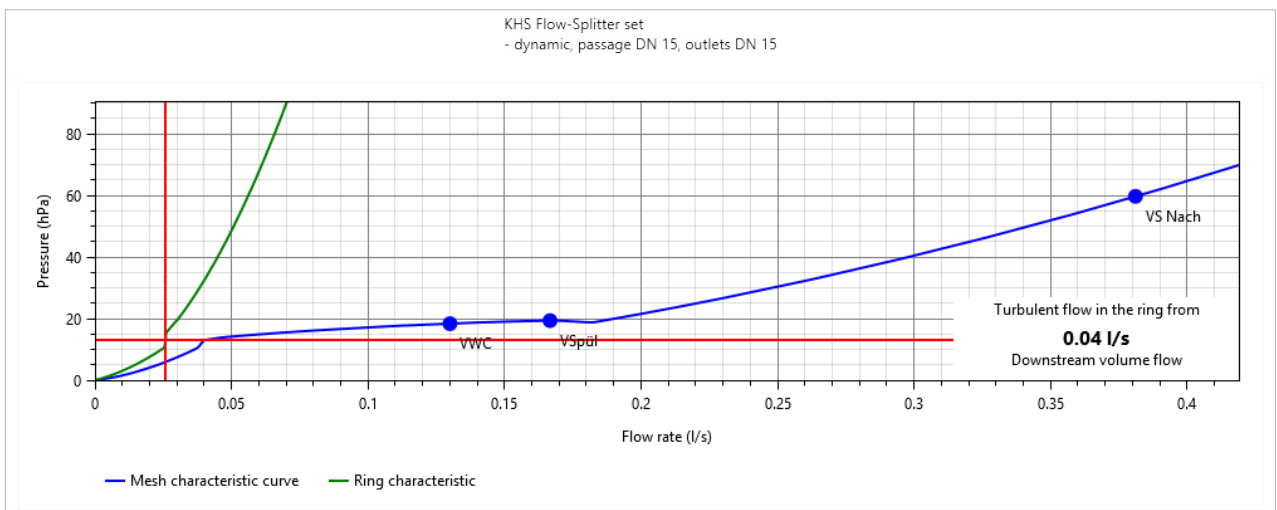
Turbulent flow in the ring from
0.04 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 15, outlets DN 15
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	3
Number of WCs downstream	2



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}	0.13	100	0.17	100	0.38	100
V _{Passage}	0.10	78	0.14	82	0.33	85
V _{Ring}	0.03	22	0.03	18	0.06	15
Products	TECEprofil toilet module withUni cistern, installation height 1120 mm		GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
	 		 			

TS 422



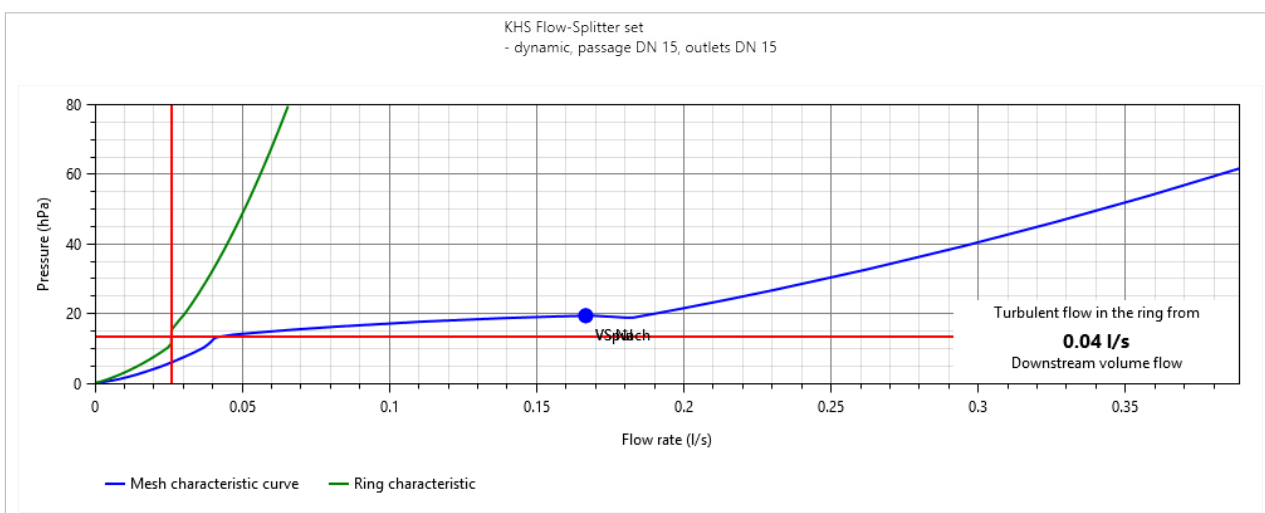
Turbulent flow in the ring from
0.04 l/s
downstream water extraction

Ring information

Flow splitter	
Product	KHS Flow-Splitter set - dynamic, passage DN 15, outlets DN 15
Ring	
Nominal diameter	DN 15
Pipe material	TECEflex Stange
Length	22.70 m
Zeta total	35.2
Natural water exchange	
WC flushes required for complete water exchange in the ring	
Number of WCs downstream	



Characteristic curve



Operating points

	V _{WC}		V _{Flush}		V _{to}	
	l/s	%	l/s	%	l/s	%
V _{downstream}			0.17	100	0.17	100
V _{Passage}			0.14	82	0.14	82
V _{Ring}			0.03	18	0.03	18
Products			GE HS50 Hygienesp. mit 1 Wasseranschluss d:50mm			
			 			